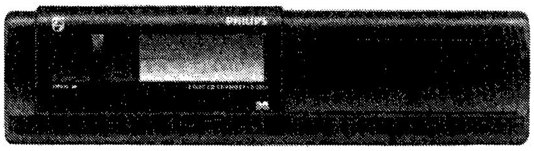
Car CD changer 22DC082

/60B/60F/61B/65

Service
Service
Service



CAR 00096A

Service Manual

12 V ⊖|▸

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COMPACT
disc
DIGITAL AUDIO

CLASS 1
LASER PRODUCT

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PCS 74 083

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1. Specification

System	: Optical (compact disc system)
Number of quantization bits	: 16-bit linear system
Sampling rate	: 176.4kHz
Oversampling	: 8 times
D/A convectors	: 2x 20-bit
Channels	: 2-channel stereo
Channel separation	: 85dB (at 1kHz)
Frequency response	: 5-20.000Hz (1.0dB)
S/N ratio	:98dB
Total harmonic distortion	: 0.03% (at 1kHz)
Power supply	: 10.5-16.0V
Consumption (play)	: 1A
Output voltage	: 750mV/10k
Access time (load magazine till play)	: max. 31s
Bus system	: I2C
Dimensions	: 283x75x193mm
Weight	: 2.5kg

2. Connections (Fig.1)

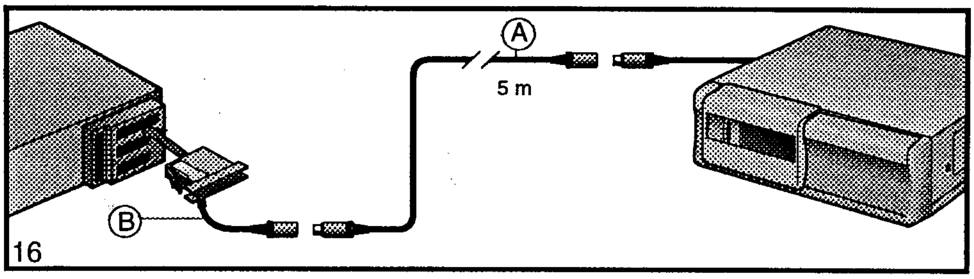


Fig. 1

3. Operation (Fig. 2)

Preparation for playback.

- Insert one or more CDs (max. 6) into the disc housing of the magazine with the label facing up.
- Insert the magazine all the way into the changer with the arrow facing up.
- Slide the door to the left to close the magazine compartment.

Removing a CD from the magazine.

- Push the lever on the magazine for the relevant CD. The CD will come out halfway from the magazine.
- Pull out the CD by the edge.

Note: Hold the CD so that no finger prints are left on the disc surface.

Removing the magazine.

- Slide the door to the right.
- Press the eject switch.

Notes:

- Do not insert heat-deformed CDs into the magazine.
- Only one CD can be inserted in each housing.
- To play a 3" disc, only use adapter ring SBC3580.
- Do not forcibly remove the magazine. Refer to "Magazine emergency eject", page 10
- Only Compact Discs with the logo shown below can be used.

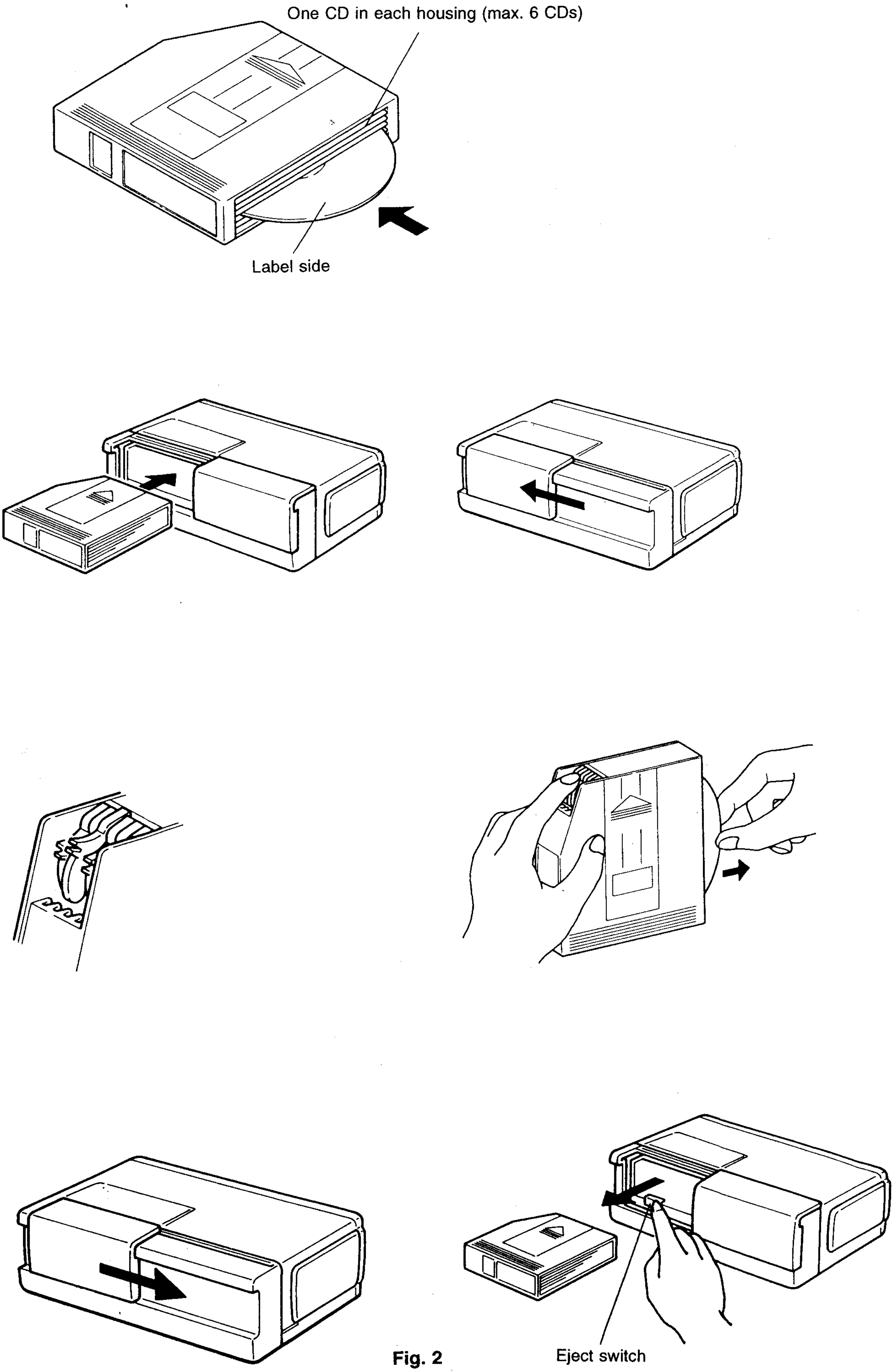

One CD in each housing (max. 6 CDs)
Label side
Eject switch

Fig. 2

4. Function description

Function	Step	Description	Fig.
Magazine insertion	1)	The magazine transports the eject lever.	3
	2)	The eject lever drives the magazine lock arm.	
	3)	The magazine lock arm locks the magazin and operates the magazine lock switch.	
Disc loading	1)	The elevator motor rotates (NOR).	4
	2)	The rotation is transmitted to gears A, B, C, D, E.	
	3)	Gear E drives the CR chassis in direction F.	
	4)	The photo interruptor counts the holes H to control the level of the CR chassis.	
	5)	The CR chassis stops at the level of the chosen CD.	
	6)	The loading motor rotates (NOR).	5
	7)	The rotation is transmitted to gears I, K, L and via gear K also to gears J, M, N, O.	
	8)	The rotation of gear L drives the disc eject lever back and forth in direction P, Q.	
	9)	The disc eject lever ejects the CD from the magazine.	
	10)	The drive roller (same spindle as gear O) rotates.	6
	11)	Sandwiched between drive roller and free roller the CD moves towards the clamper.	
	12)	Photo sensors 1, 2, 3 are consecutively blocked by the CD and finally only sensor 3 is in blocked condition.	5
	13)	The loading motor stops upon judgement: CD entered.	
	14)	The elevator motor rotates REV.	4
	15)	The rotation is transmitted to gears A, B, C, D, E.	
	16)	The rotation of gear E drives the CR chassis in direction G.	
	17)	The CR chassis transports the clamper, which clamps the CD.	
	18)	The CR chassis drives the arm of the home position switch and operates the home position switch.	
	19)	The photo interruptor counts the holes H in gear C and the elevator motor stops at judgement: CR chassis in home position.	
Play	1)	The spindle motor rotates the CD.	7
	2)	The sled motor rotates.	
	3)	The rotation is transmitted through the gears to the feed screw and drives the pick-up unit.	
	4)	The lead-in position of the CD is detected by the inner limit position switch and the reading of the CD data starts.	

Function	Step	Description	Fig.
Return of the CD to the magazine	1)	The elevator motor rotates.	4
	2)	The rotation is transmitted to gears A, B, C, D, E.	
	3)	The rotation of gear E drives the CR chassis in direction F.	
	4)	The clamper is removed.	
	5)	The CD is sandwiched between drive roller and free roller.	
	6)	The photo interruptor counts the holes H to control the level of the CR chassis.	
	7)	The CR chassis stops at the level of the chosen disc.	
	8)	The loading motor rotates.	8
	9)	The rotation is transmitted to gears I, J, K, M, N, O.	
	10)	The drive roller (same spindle as gear O) rotates and drives the CD towards the magazine.	5
	11)	Blocking of photo sensor 3 is cancelled.	
	12)	Photo sensors 2 and 1 are consecutively blocked by the CD and the blocking is cancelled again.	
	13)	The loading motor stops upon judgement: CD in magazine.	
Magazine ejection	1)	The eject button operates the eject switch.	9
	2)	The elevator motor rotates.	4
	3)	The rotation is transmitted to gears A, B ,C, D, E.	
	4)	Gear E drives the CR chassis in direction G.	
	5)	The CR chassis drives the arm of the home position switch and operates the home position switch.	
	6)	The photo interruptor counts the holes H and the elevator motor stops at judgement: CR chassis in home position.	
	7)	The loading motor rotates.	5
	8)	The rotation is transmitted to gears J, K, L.	
	9)	The rotation of gear L drives the disc eject lever back and forth in direction P, Q.	
	10)	The disc eject lever drives the eject arm.	9
	11)	The eject arm drives the eject lever, the magazine lock arm is released and the magazine is ejected.	
	12)	The magazine lock switch is switched off and judgement is given: magazine ejected.	

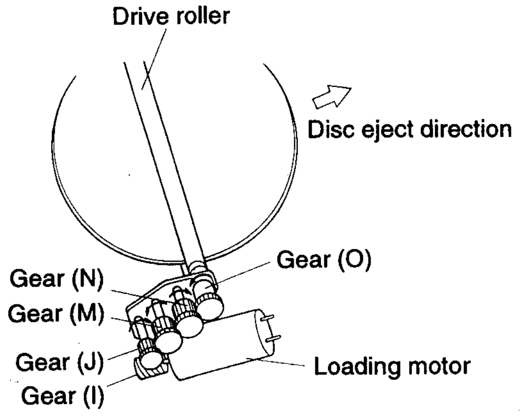


Fig. 8

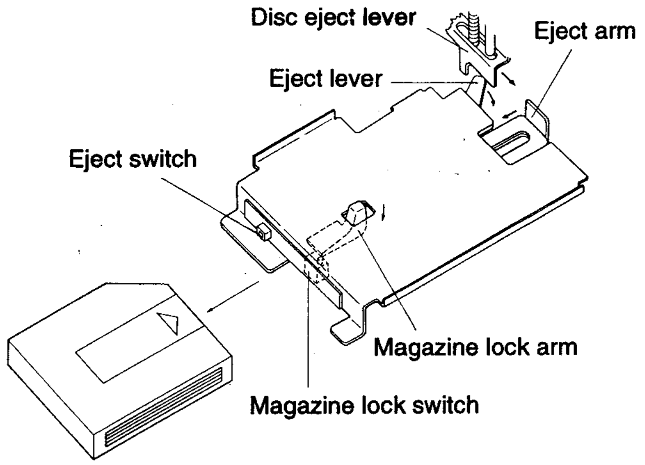


Fig. 9

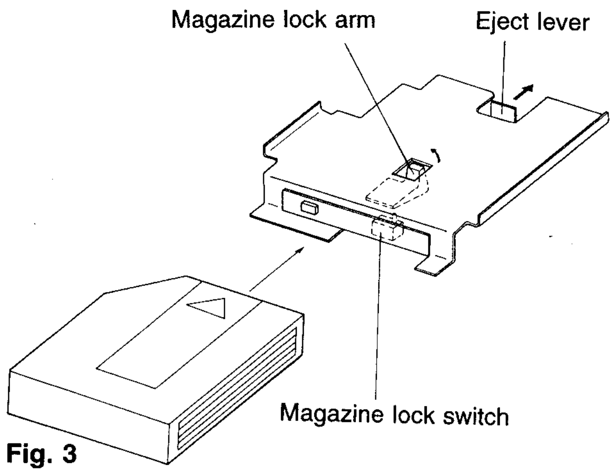
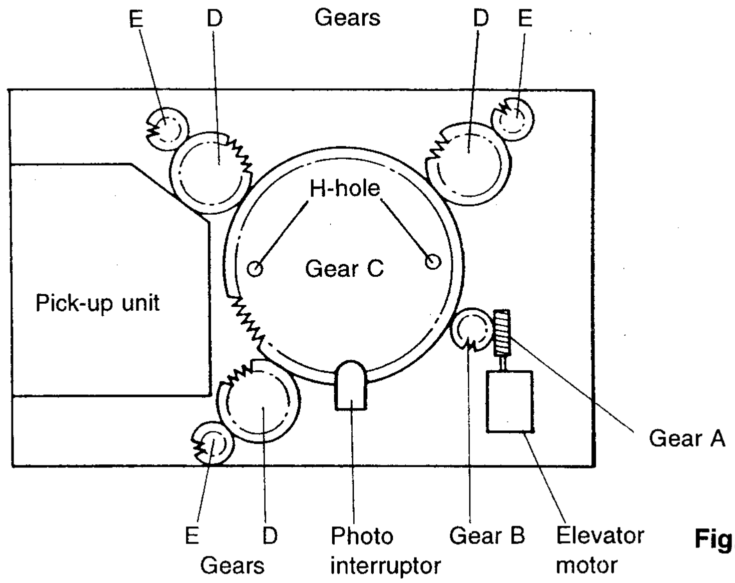

Magazine lock arm
Eject lever
Magazine lock switch

Fig. 3


E
D
Gears
D
E
H-hole
Gear C
Pick-up unit
Gear A
E
D
Gears
Photo interruptor
Gear B
Elevator motor

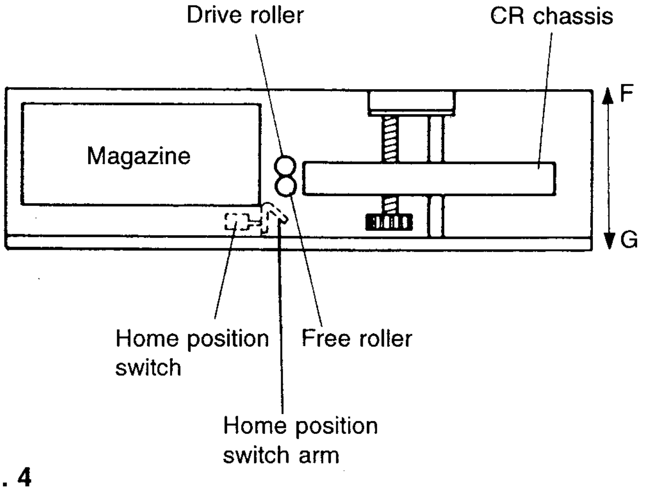
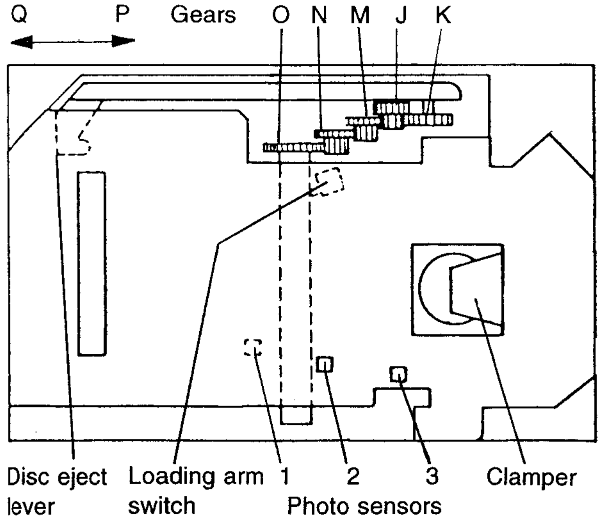

Drive roller
CR chassis
Magazine
F
G
Home position switch
Free roller
Home position switch arm

Fig. 4


Q
P
Gears
O
N
M
J
K
Disc eject lever
Loading arm switch
1
2
3
Photo sensors
Clamper

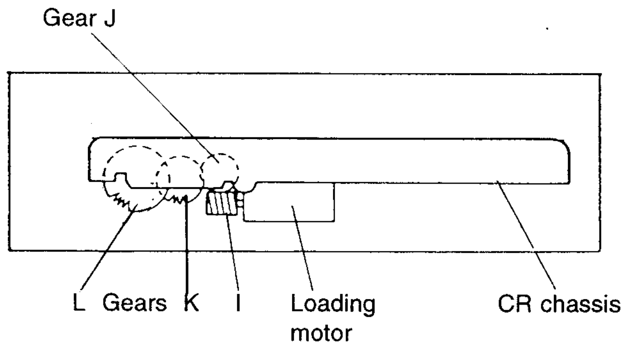

Gear J
L
Gears
K
I
Loading motor
CR chassis

Fig. 5

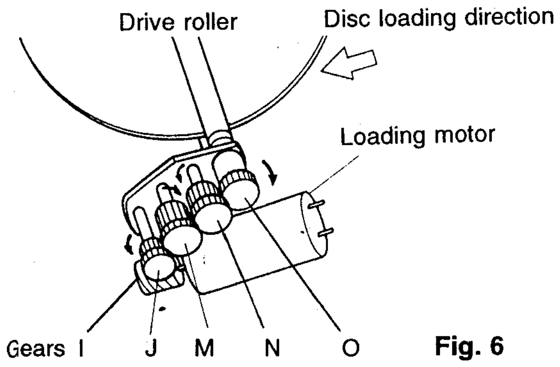

Drive roller
Disc loading direction
Loading motor
Gears I
J
M
N
O

Fig. 6

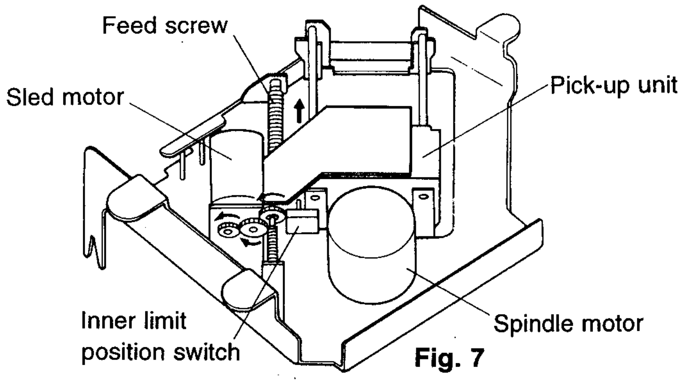
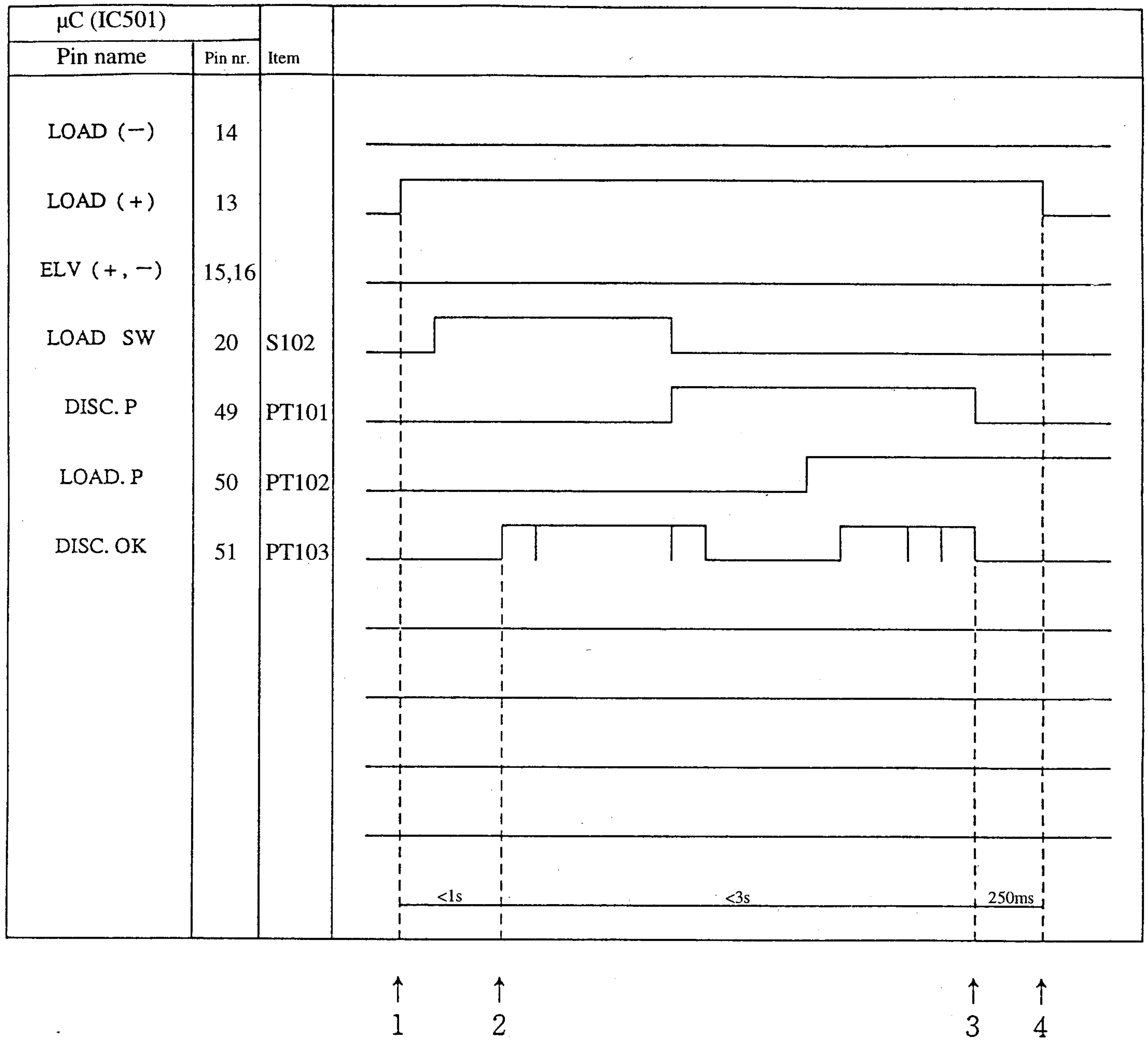

Feed screw
Sled motor
Pick-up unit
Inner limit position switch
Spindle motor

Fig. 7

5.1 Disc loading (with CD).

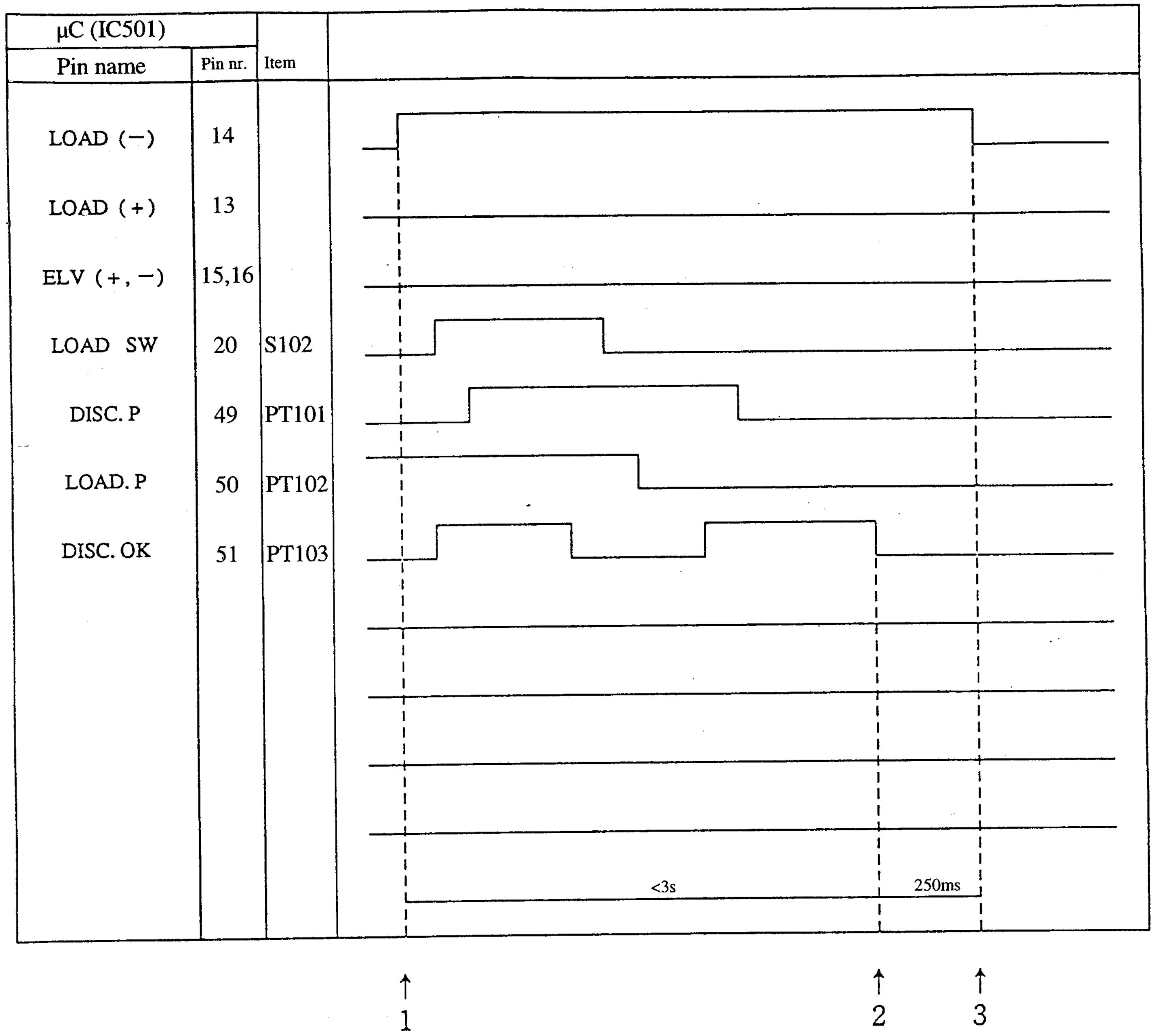

<1s
<3s
250ms
1
2
3
4

µC (IC501)		
Pin name	Pin nr.	Item
LOAD (−)	14	
LOAD (+)	13	
ELV (+, −)	15,16	
LOAD SW	20	S102
DISC. P	49	PT101
LOAD. P	50	PT102
DISC. OK	51	PT103

SEQUENCE

1	Pin 16: loading motor activation (forward direction).
2	Disc ejected from the magazine and detected by PI101 within 1s (DISC OK = "H").
3	µC conditions change after 3s: pin 51 = "L", pin 49 = "L", pin 50 = "H", pin 20 = "L".
*	If conditions are not met within 3s, the disc will be unloaded.
4	After sequence 3 is completed, the µC waits for 250ms, then pin 13 gets "L".

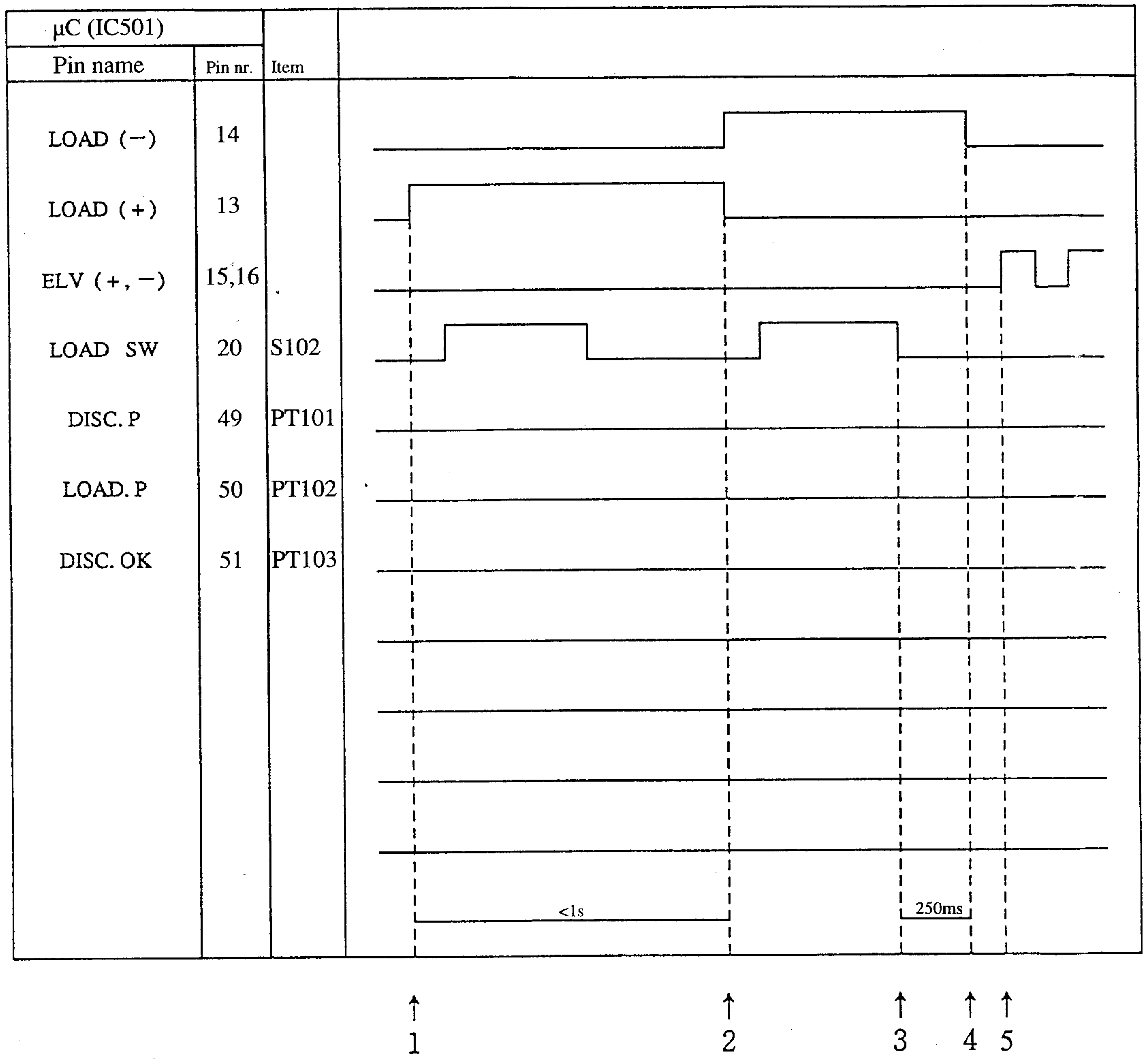
5.2 Disc unloading.


µC (IC501)
Pin name
Pin nr.
Item
LOAD (−) 14
LOAD (+) 13
ELV (+, −) 15,16
LOAD SW 20 S102
DISC. P 49 PT101
LOAD. P 50 PT102
DISC. OK 51 PT103
<3s
250ms
1
2
3

SEQUENCE

1	Pin 14 = "H": loading motor activation (reverse direction).
2	µC conditions change after 3s: pin 51 = "L", pin 49 = "L", pin 50 = "L", pin 20 = "L".
*	If condition is not met within 3s, the disc will reload and the sequence will be repeated.
3	After sequence 2 is completed, the µC waits for 250ms, then pin 14 gets "L".
*	After 3 unsuccessful attempts, the display shows "ERROR". The elevator moves to "home position".
*	Unloading process complete: pin 50 = "L", pin 49 = "L", pin 51 = "L", pin 20 = "L".

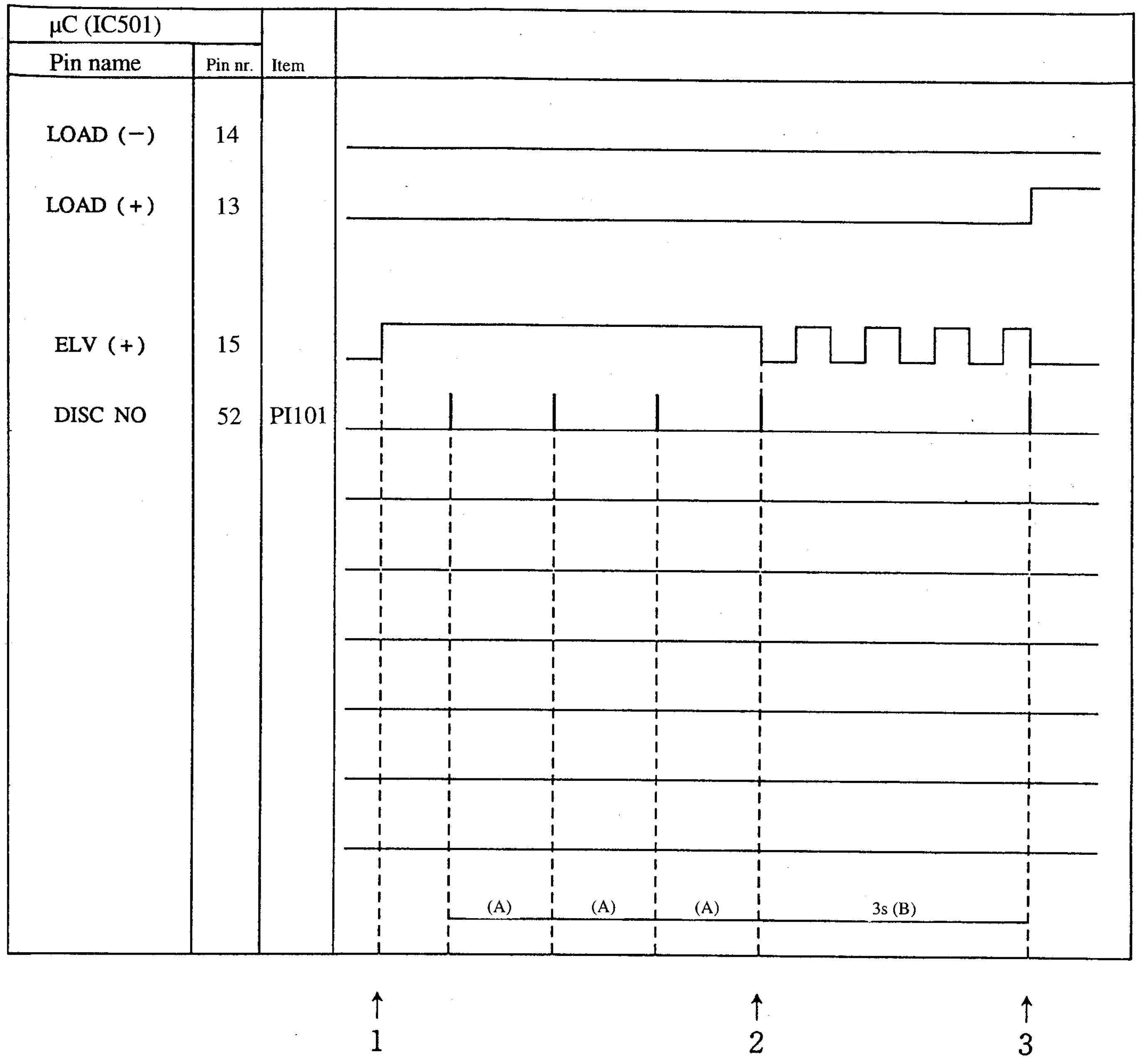
5.3 Disc loading (without CD).


µC (IC501)
Pin name
Pin nr.
Item
LOAD (−) 14
LOAD (+) 13
ELV (+, −) 15,16
LOAD SW 20 S102
DISC. P 49 PT101
LOAD. P 50 PT102
DISC. OK 51 PT103
<1s
250ms
1
2
3
4
5

SEQUENCE

1	Pin 16 = "H": loading motor activation (forward direction).
2	The µC waits for 1s to meet the conditions: pin 49 = "H", pin 50 = "H", pin 51 = "H".
*	If conditions are not met, the µC judges a "no disc" condition and the unloading cycle is activated. Pin 14 gets "H", pin 13 gets "L".
3	When pin 14 is "H" the µC waits for 250ms, then pin 14 gets "L". This completes the loading cycle.
4	The elevator moves to the next disc housing in the magazine. During this sequence the µC applies a steady pulse to pin 14 or 15.

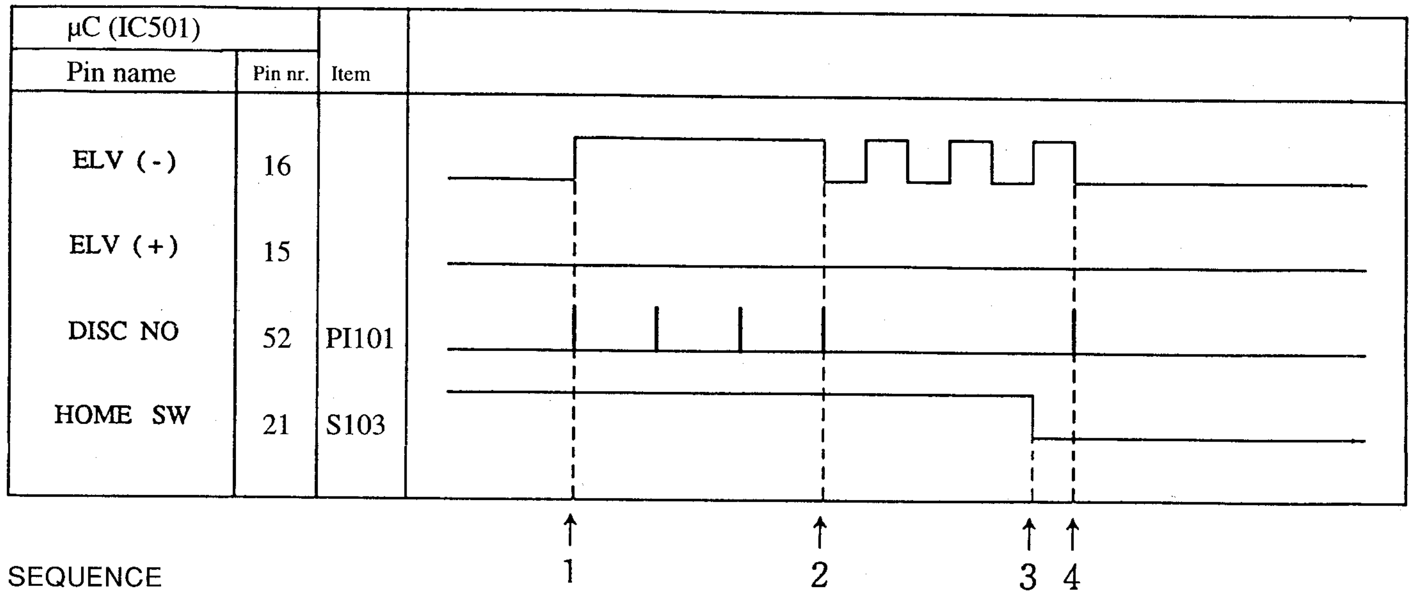
5.4 Disc change.


µC (IC501)
Pin name
Pin nr.
Item
LOAD (−)
14
LOAD (+)
13
ELV (+)
15
DISC NO
52
PI101
(A)
(A)
(A)
3s (B)
1
2
3

SEQUENCE

1	Pin 14 or 13 is held "L" (depending on the direction of the elevator) until the elevator is at the housing position of the target CD.
2	When the elevator has reached the proper position, a pulse is applied to pin 15 or 16.
3	When the elevator has reached the proper position, pin 15 or pin 16 gets "L".
*	If no signal for 1s from disc sensor the display will show "ERROR".
*	If no signal for 3s from disc sensor the display will show "ERROR".

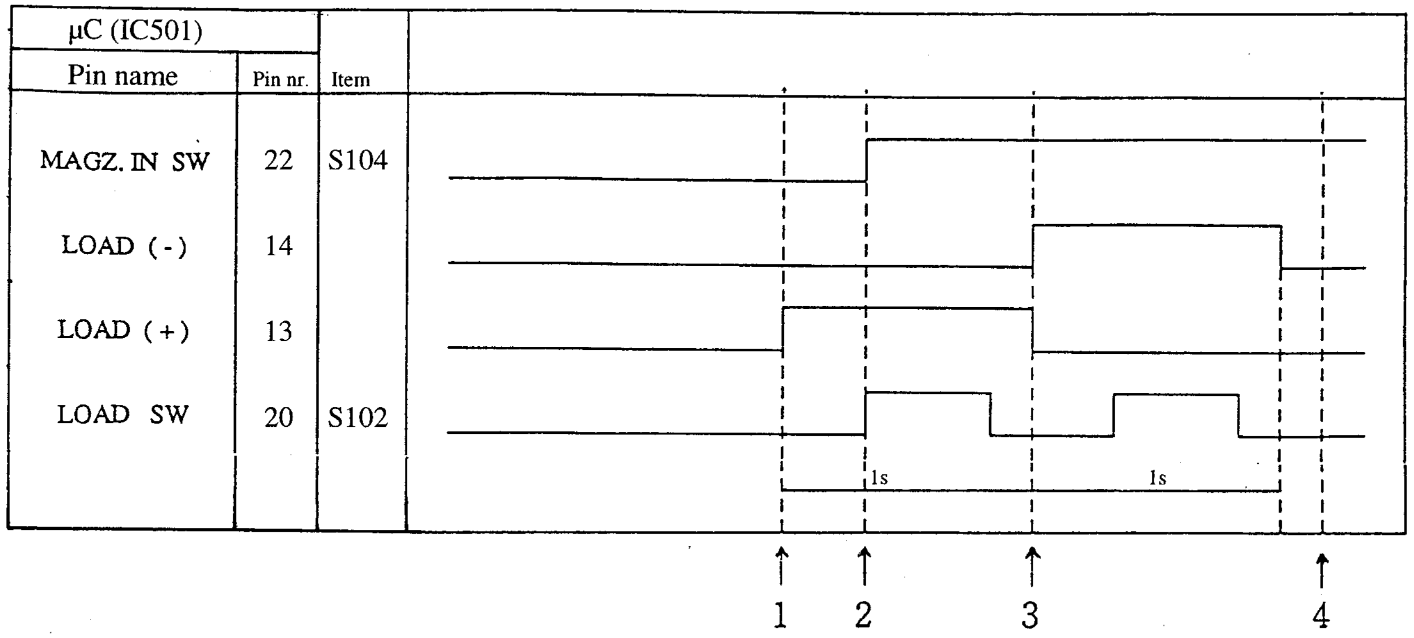
5.5 Return to home position.


µC (IC501)
Pin name
Pin nr.
Item
ELV (-)
16
ELV (+)
15
DISC NO
52
PI101
HOME SW
21
S103
1
2
3
4

SEQUENCE

Home position	This is the rest position for the elevator mechanism before the play mode starts and during the eject cycle.
1	Pin 14 gets "H". The elevator mechanism starts lowering.
2	When the elevator has reached one position prior to the target one, a pulse is applied to pin 16.
3	Pin 21 gets "L".
4	When the home sw gets "L", the first disc signal is detected. Pin 16 gets "L".

5.6 Magazine eject.


µC (IC501)
Pin name
Pin nr.
Item
MAGZ. IN SW
22
S104
LOAD (-)
14
LOAD (+)
13
LOAD SW
20
S102
1s
1s
1
2
3
4

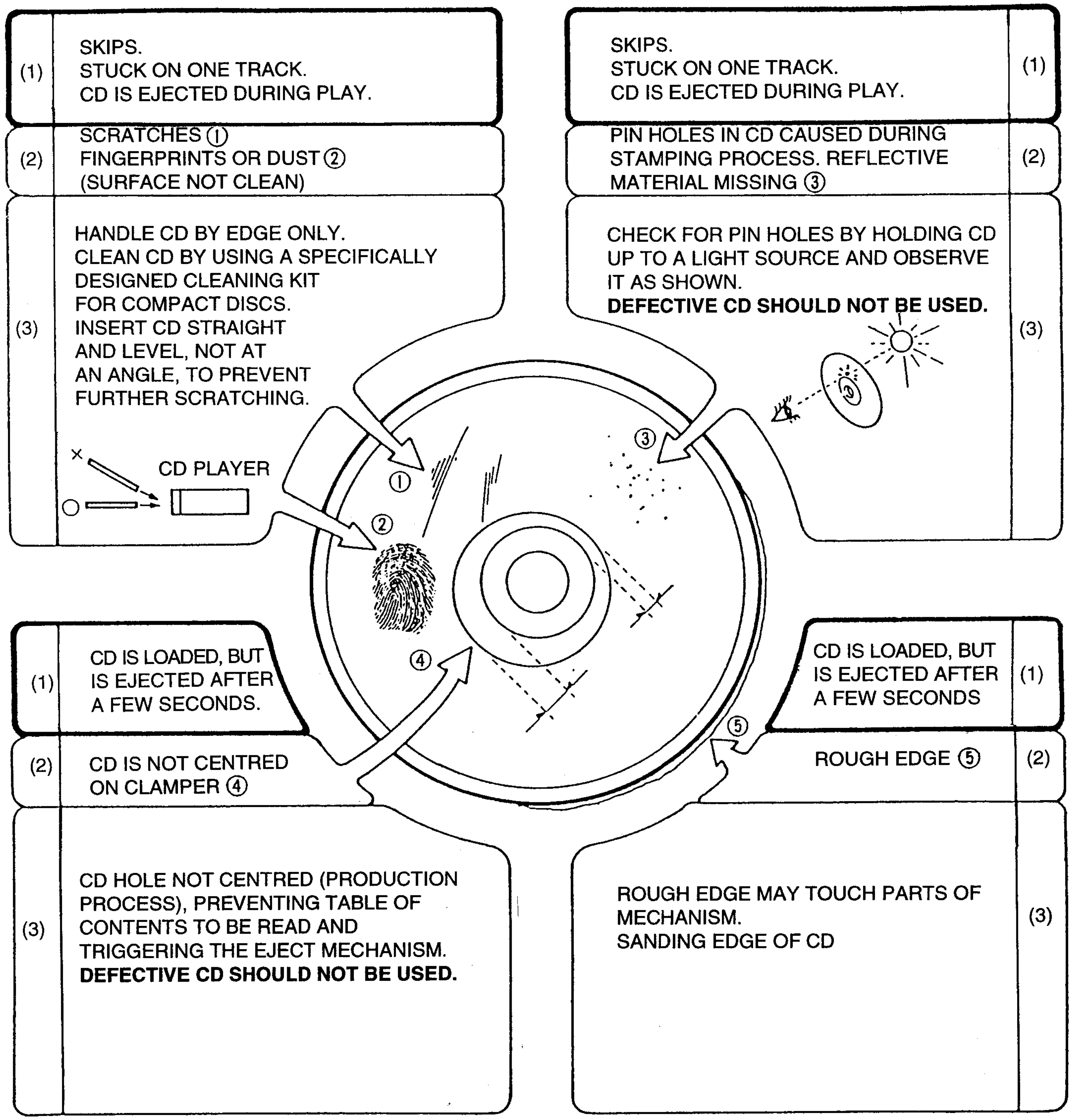
SEQUENCE

1	Pin 13 gets "H" for 1s.
2	When the magazine has been ejected, pin 22 gets "H".
3	Pin 14 gets "H" for 1s.
4	Eject cycle completed: pin 22 = "H", pin 20 = "L".
*	If eject is unsuccessful, the process will be repeated three times. After that the LCD shows "ERROR".

6. CD Symptoms and failure guide.

For symptoms occurring with specific discs.

NOTE: (1) symptoms
(2) cause
(3) solution


CD PLAYER
①
②
③
④
⑤

(1) SKIPS.
STUCK ON ONE TRACK.
CD IS EJECTED DURING PLAY.

(2) SCRATCHES ①
FINGERPRINTS OR DUST ②
(SURFACE NOT CLEAN)

(3) HANDLE CD BY EDGE ONLY.
CLEAN CD BY USING A SPECIFICALLY DESIGNED CLEANING KIT FOR COMPACT DISCS.
INSERT CD STRAIGHT AND LEVEL, NOT AT AN ANGLE, TO PREVENT FURTHER SCRATCHING.

(1) SKIPS.
STUCK ON ONE TRACK.
CD IS EJECTED DURING PLAY.

(2) PIN HOLES IN CD CAUSED DURING STAMPING PROCESS. REFLECTIVE MATERIAL MISSING ③

(3) CHECK FOR PIN HOLES BY HOLDING CD UP TO A LIGHT SOURCE AND OBSERVE IT AS SHOWN.
DEFECTIVE CD SHOULD NOT BE USED.

(1) CD IS LOADED, BUT IS EJECTED AFTER A FEW SECONDS.

(2) CD IS NOT CENTRED ON CLAMPER ④

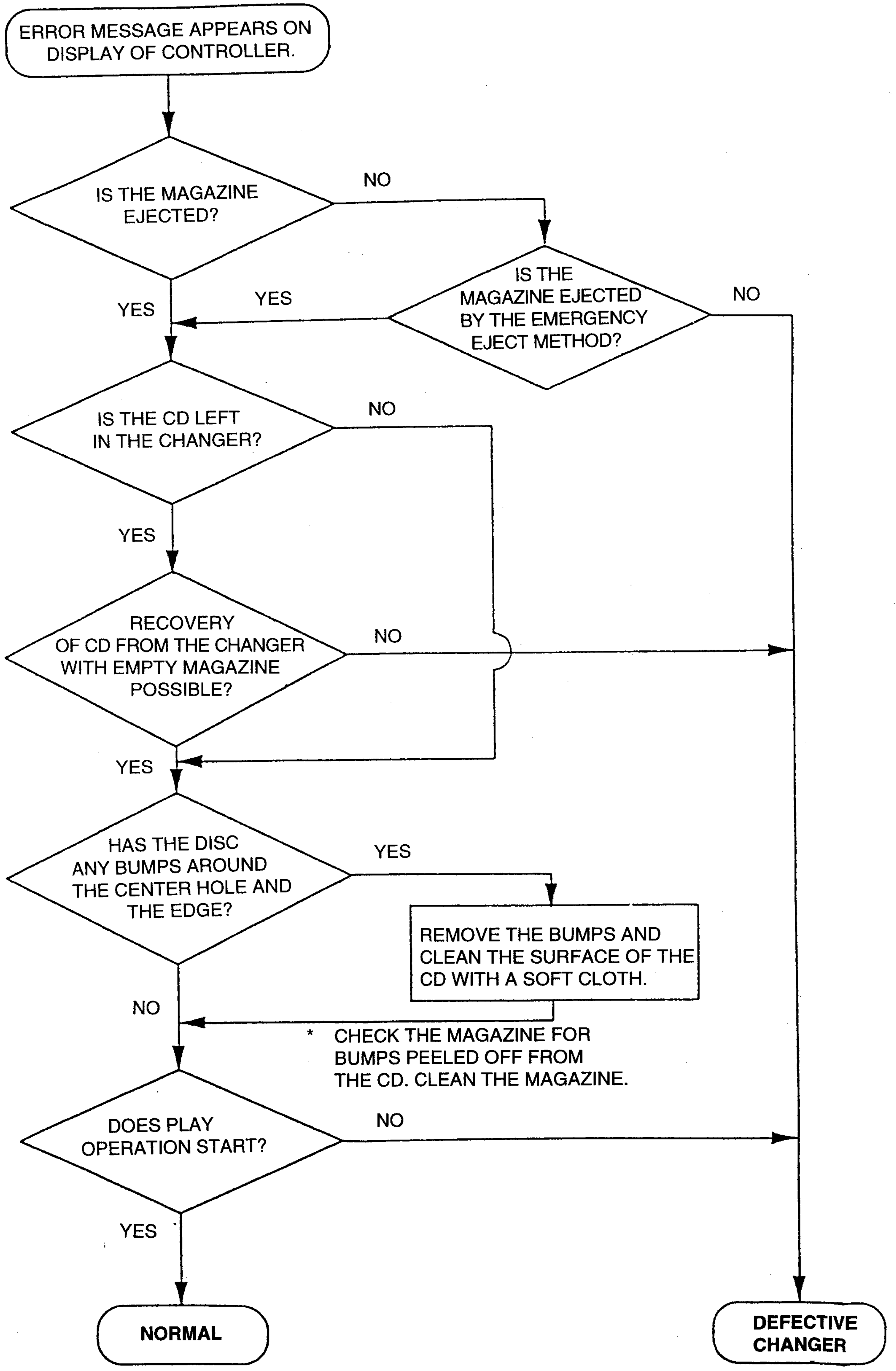
(3) CD HOLE NOT CENTRED (PRODUCTION PROCESS), PREVENTING TABLE OF CONTENTS TO BE READ AND TRIGGERING THE EJECT MECHANISM.
DEFECTIVE CD SHOULD NOT BE USED.

(1) CD IS LOADED, BUT IS EJECTED AFTER A FEW SECONDS.

(2) ROUGH EDGE ⑤

(3) ROUGH EDGE MAY TOUCH PARTS OF MECHANISM.
SANDING EDGE OF CD

7. ERROR DIAGNOSIS FLOW CHART.


ERROR MESSAGE APPEARS ON DISPLAY OF CONTROLLER.
IS THE MAGAZINE EJECTED?
NO
IS THE MAGAZINE EJECTED BY THE EMERGENCY EJECT METHOD?
YES
YES
NO
IS THE CD LEFT IN THE CHANGER?
NO
YES
RECOVERY OF CD FROM THE CHANGER WITH EMPTY MAGAZINE POSSIBLE?
NO
YES
HAS THE DISC ANY BUMPS AROUND THE CENTER HOLE AND THE EDGE?
YES
REMOVE THE BUMPS AND CLEAN THE SURFACE OF THE CD WITH A SOFT CLOTH.
NO
* CHECK THE MAGAZINE FOR BUMPS PEELED OFF FROM THE CD. CLEAN THE MAGAZINE.
DOES PLAY OPERATION START?
NO
YES
NORMAL
DEFECTIVE CHANGER

8. Magazine emergency eject

Method:

- Fold a business card vertically in half.
- Slide the door of the changer to the right.
- Insert the card between the CD magazine and the changer mechanism.
- The magazine will be ejected when the card is inserted approx. 40mm.

Principle:

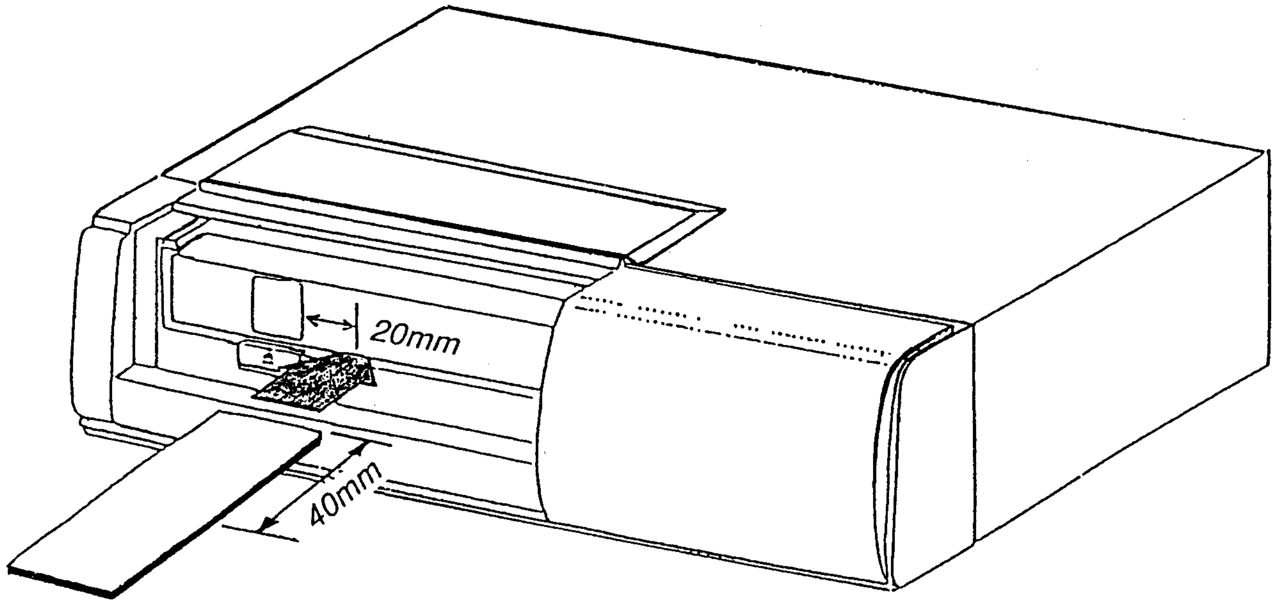
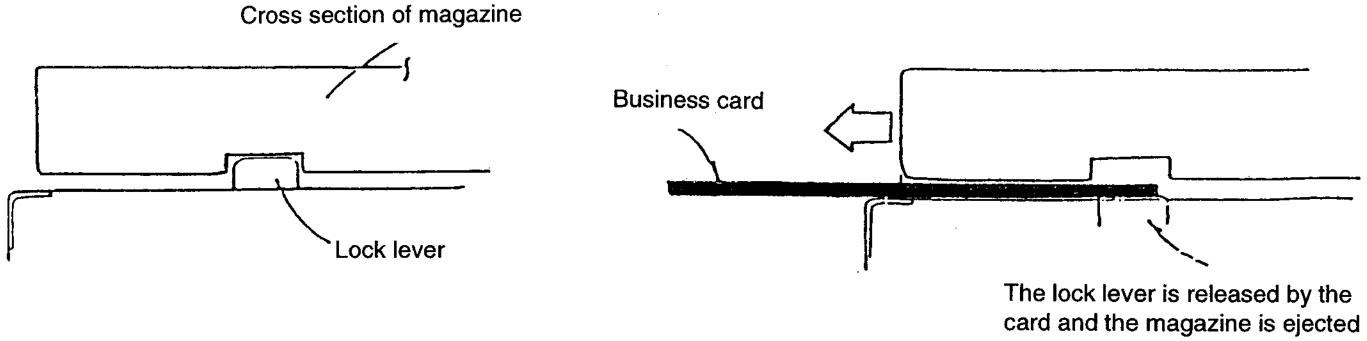


Fig. 10



The lock lever is released by the card and the magazine is ejected

Fig. 11

9. Sensor status on errors.

Perform the repair based on the following information when the changer is offered for repair after an error indication appeared on the control set.

9.1 Relation between ERROR and sensors

Indication	DISCP	DOKSW	LODSW	DSCIN	ARMSW	MAGSW	HMPSW	Cause of error
ERROR (1)	-	X	X	X	X	-	-	A CD is caught between the magazine and the roller. Neither loading nor unloading is possible.
ERROR (2)	-	X	X	X	-	-	-	Unloading has been tried 3 times, but unloading is impossible.
ERROR (3)	-	X	X	X	-	-	-	Unloading has been tried for 3s, but unloading is impossible.
ERROR (4)	-	X	X	X	-	-	-	Loading has been tried for 3s, but loading is impossible.
ERROR (5)	-	-	-	-	X	-	-	After completing the unloading or loading, the loading arm-detector switch is not switched off for 3s.
ERROR (6)	X	-	-	-	-	-	X	Disc changing is not completed within 3s.
ERROR (7)	-	-	-	-	X	X	-	Eject operation has been executed 3 times, but the magazine cannot be ejected.

9.2 Sensor function

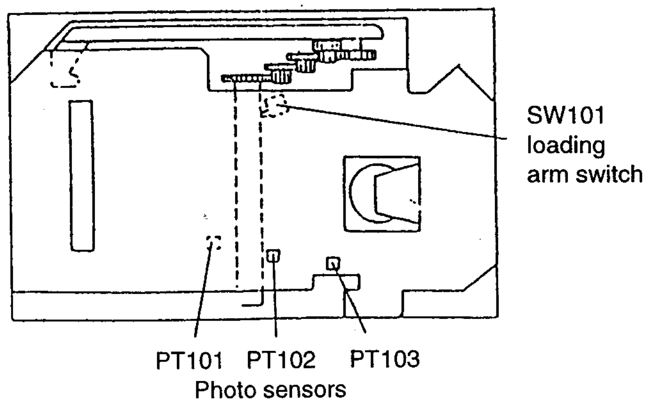
Sensor	Switching function for detecting	Item
DISCP	Position of the CD (photo)	PI101
DOKSW	Whether the CD is housed into the magazine (photo)	PT101
LODSW	Whether the CD is loaded into the carriage (photo)	PT102
DSCIN	Whether the carriage contains any CD (photo)	PT103
ARMSW	Status of the loading arm, pulling the CD from the magazine	SW101
MAGSW	Whether the magazine is being inserted into the changer	SW102
HMPSW	Whether the carriage has moved to the home position	SW103

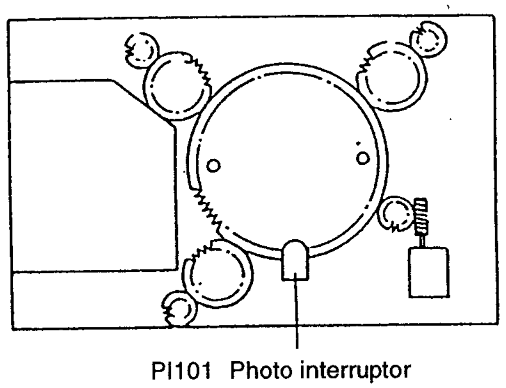
9.3 Conditions for completion of the loading/unloading operation

The judgement of completion is made by 3 sensors, viz. DOKSW, LODSW and DSCIN.

	DOKSW	LODSW	DSCIN
Loading complete	OFF (L)	ON (H)	ON (H)
Unloading complete	OFF (L)	OFF (L)	OFF (L)

a) If DOKSW is OFF, LODSW is ON and DSCIN is ON within 3s after starting of loading, ERROR (4) appears.
b) If DOKSW is OFF, LODSW is OFF and DSCIN is OFF within 3s after starting of unloading, ERROR (3) appears.
c) If unloading has been repeated 3 times and the CD cannot be inserted into the magazine, ERROR (2) appears.
d) If loading and unloading have been repeated 3 times and the CD cannot be inserted into the carriage or the magazine, ERROR (1) appears.
(e) If the loading arm-switch has not been switched OFF (L) within 3s after the loading has been completed or judgement has been made on the completion of unloading, ERROR (5) appears.


SW101
loading
arm switch
PT101 PT102 PT103
Photo sensors


PI101 Photo interruptor

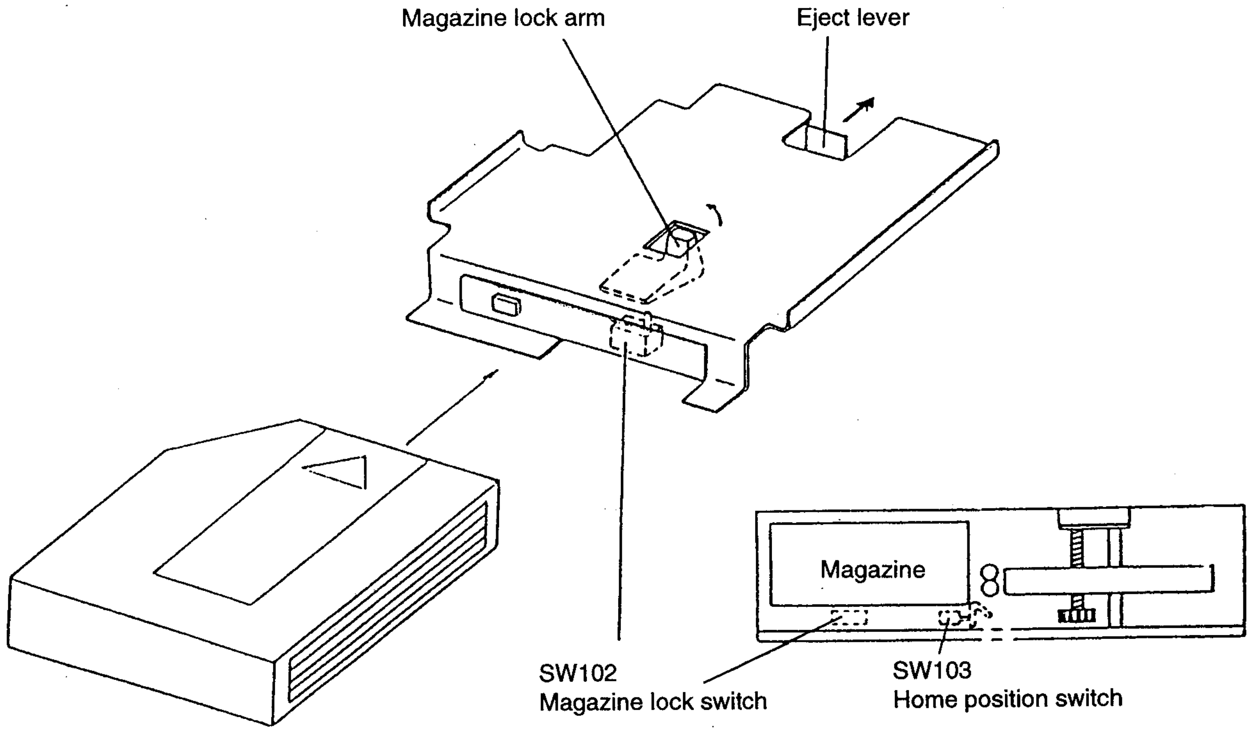

Magazine lock arm
Eject lever
Magazine
SW102
Magazine lock switch
SW103
Home position switch

Fig. 12

9.4 Conditions for completion of disc ejection

The judgement is made by 2 switches, viz. ARMSW and MAGSW.

	ARMSW	MAGSW
Ejection complete	OFF (L)	OFF (H)

a) If the switches, ARMSW and MAGSW, have not been switched OFF, ERROR (7) appears.

9.5 Conditions for completion of disc change

The judgement is made by counting the number of pulses from DISCP (photo interruptor).

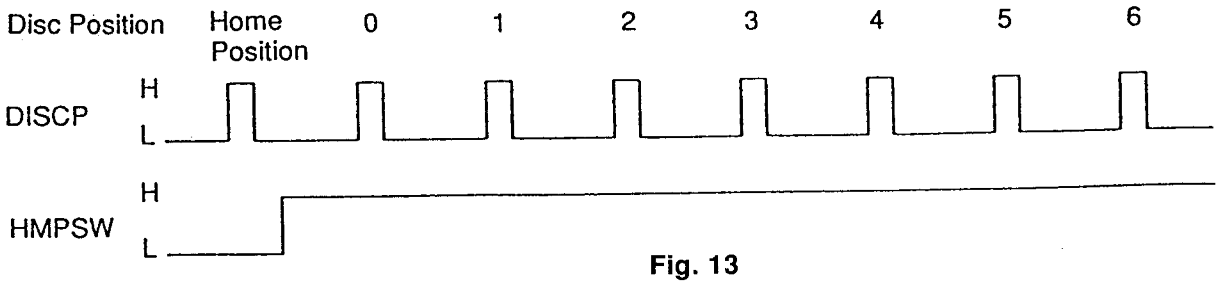

Disc Position
Home Position
0
1
2
3
4
5
6
DISCP
H
L
HMPSW
H
L

Fig. 13

a) If the pulse from DISCP has not been present for 3s during disc change, ERROR (6) appears.

9.6 Function after error indication

Error	Function after indication
(1)	No function.
(2)	Pulls the CD into the carriage and moves to home position, waits for signal from eject switch. When the eject button is pressed, ejects the magazine leaving the CD inside the mechanism.
(3)	Loads the CD into the mechanism again, performs unloading operation again. If CD cannot be unloaded after 3 times ERROR (3) will appear.
(4)	Performs the operation of the next CD and ERROR (4) will disappear.
(5)	Performs unloading operation in the loading mode, loading operation in unloading mode. After loading/unloading 3 times and if loading arm-switch has not switched OFF, ERROR (1) appears.
(6)	Waiting for signal from eject switch. When the eject button is pressed, moves the carriage to the home position and ejects the magazine. If any CD is left inside the mechanism after the eject operation, ERROR (2) will appear. If no CD is left inside, ERROR (6) will be replaced by "--".
(7)	Waiting for signal from eject switch. When the eject button is pressed, performs eject operation again. If magazine is not ejected after 3 times, ERROR (7) will appear.

10. Disassembly instructions

10.1 Cabinet etc.

- **Metal cover, pos. 2.**

Remove screws 5 (left 2x, right 2x, rear 3x).
Lift cover at the bottom side and slide it to the rear (mind the screws for hor/vert mounting).

- **Front, pos. 1.**

Lift the side lugs over the locking hooks.
Slide the front from the chassis.

- **Inner cover, pos. 14.**

Remove screws 27.
Slide the cover from the chassis.

- **Main pcb (Fig. 14).**

Remove base plate 2.
Remove screws marked "■".
Remove bracket marked "@".
Slide the pcb in the direction of the arrow to release it from 3 locking pins.
Disconnect all connectors, unsolder ground wire.

- **Damper brackets, pos. 16, 22 (Fig. 14-16).**

Remove 8 damper holders 7 by lifting hooks D.
Remove damper brackets 16, 22 (screw "▲" in each damper).
Unhook springs 11, 25 from the chassis.

10.2 CD mechanism

- **Pick-up unit, pos. 278 (Fig. 17).**

Remove screws marked "⊕".

- **Sled motor, pos. M103 (Fig. 17).**

Remove solder (A).
Remove bracket with motor (screws marked "X").
Remove solder (B).
Remove screw marked "❖".

- **Head unit, pos. HD101 (Fig. 17).**

Remove shaft bracket, screw bracket (screws marked "◊").

- **LED pcb (Fig. 18).**

Remove screws marked "●".

- **Switch pcb (Fig. 18).**

Remove screw inside inner cover 14.
Lift pcb from black and clear holders.

- **Photo pcb (Fig. 19, 20).**

Remove top chassis and base chassis (7 screws marked "∝").
Remove chassis CR.
Remove solder C.
Remove screw marked "✪".

- **Sensor pcb (Fig. 21).**

Remove solder D and E.
Remove screws marked "☆".

- **Loading motor, pos. M101 (Fig. 21).**

Remove solder E.
Remove screws marked "★".

- **Elevator motor, pos. M102 (Fig. 22, 23).**

Remove gear C (washer A).
Remove motor bracket (screws marked "✧").
Remove solder F.
Remove screws marked "✦".

- **Interrupt pcb (Fig. 22, 23).**

Remove motor bracket and solder (see above).
Remove screws marked "#".

- **Magazine photo pcb (Fig. 24).**

Remove magazine chassis (screws marked "✳").
Remove screws marked "©".

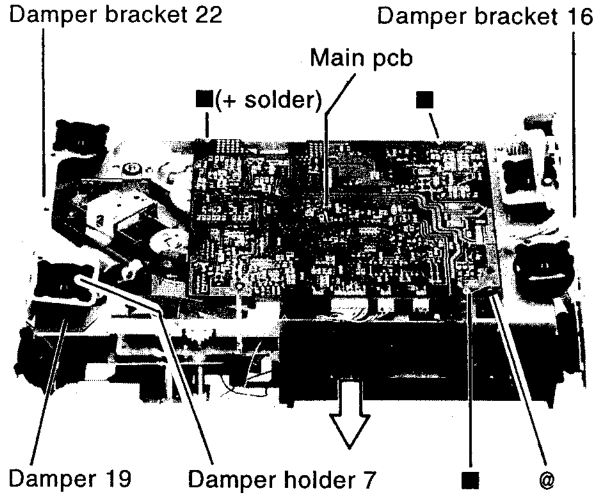

Damper bracket 22
Damper bracket 16
Main pcb
■(+ solder)
■
Damper 19
Damper holder 7
■
@

Fig 14

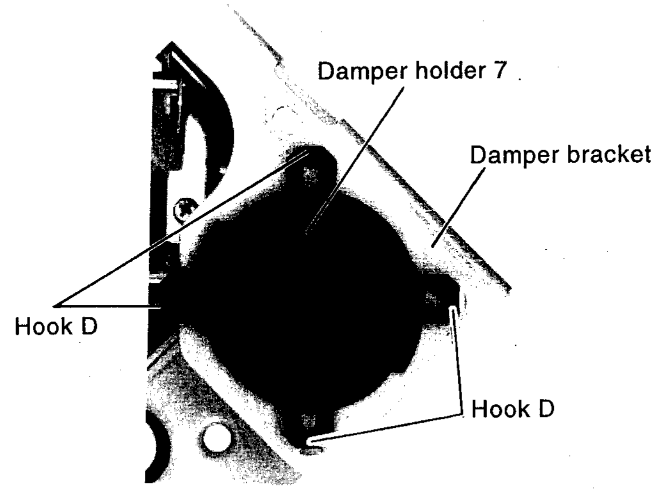

Damper holder 7
Damper bracket
Hook D
Hook D

Fig 15

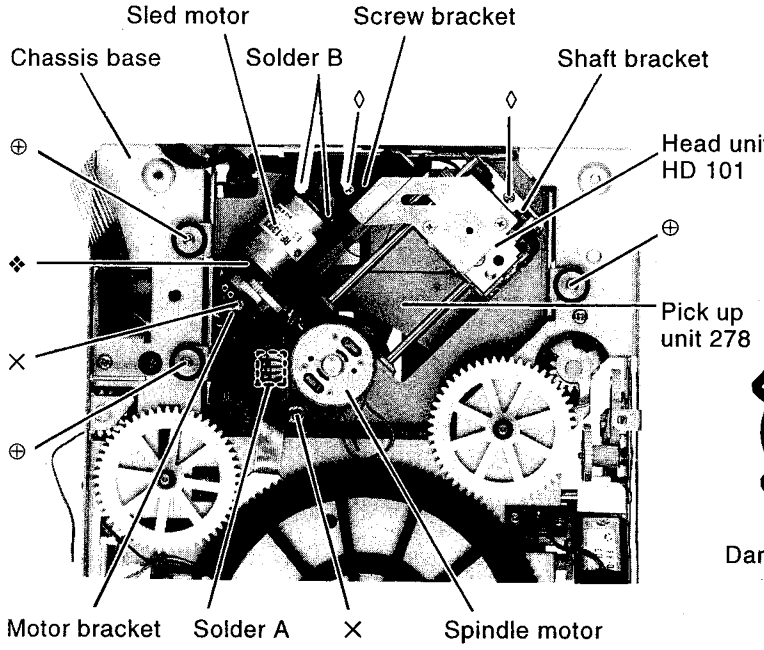

Sled motor
Screw bracket
Chassis base
Solder B
Shaft bracket
◊
◊
⊕
Head unit HD 101
⊕
❖
Pick up unit 278
X
⊕
Motor bracket
Solder A
X
Spindle motor

Fig 17

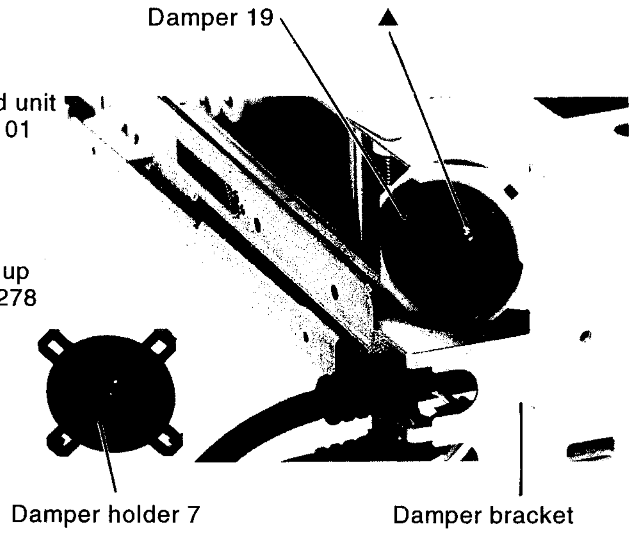

Damper 19
▲
Damper holder 7
Damper bracket

Fig 16

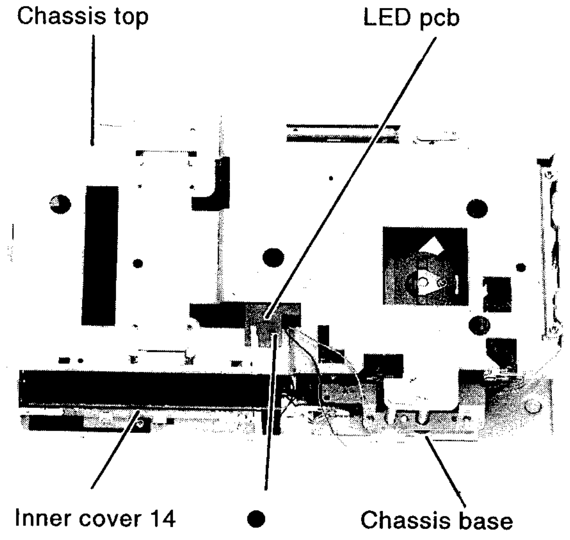

Chassis top
LED pcb
Inner cover 14
●
Chassis base

Fig 18

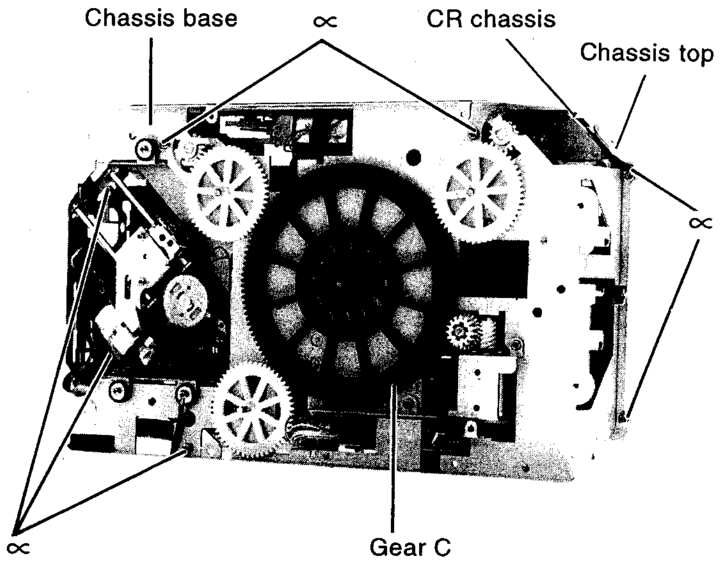

Chassis base
∝
CR chassis
Chassis top
∝
∝
Gear C

Fig 19

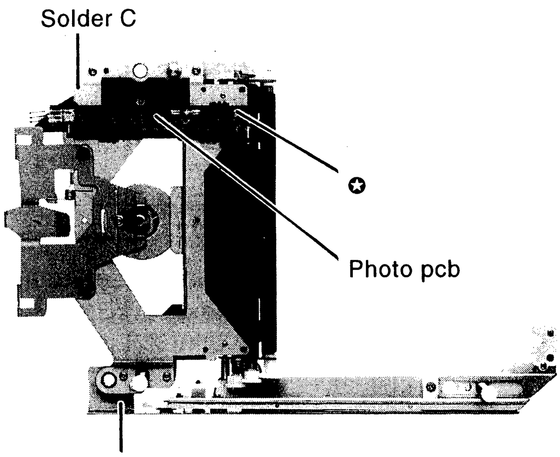

Solder C
✪
Photo pcb
CR chassis

Fig 20

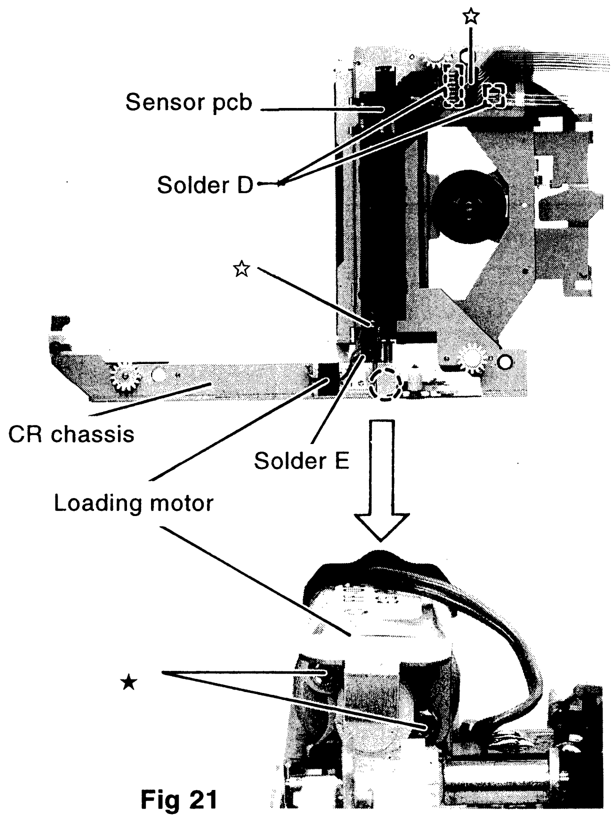

☆
Sensor pcb
Solder D
☆
CR chassis
Solder E
Loading motor
★

Fig 21

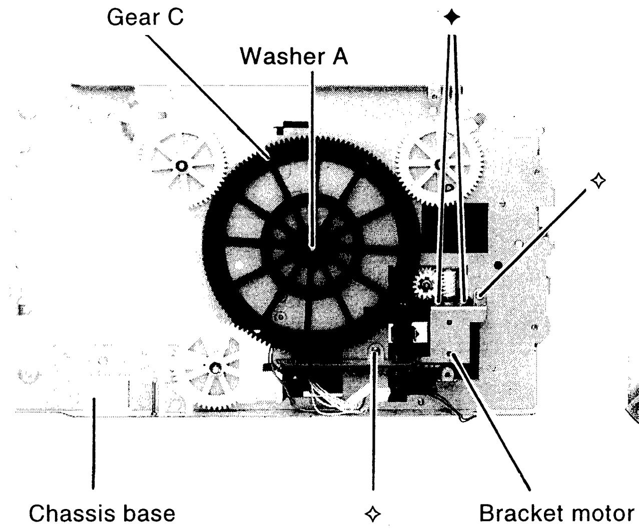

Gear C
Washer A
✦
✧
Chassis base
✧
Bracket motor

Fig 22

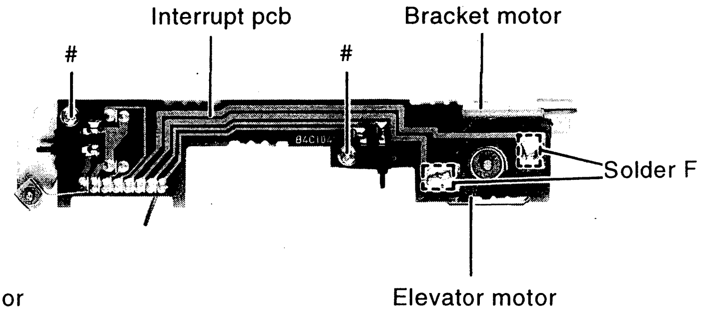

Interrupt pcb
Bracket motor
#
#
Solder F
Elevator motor

Fig 23

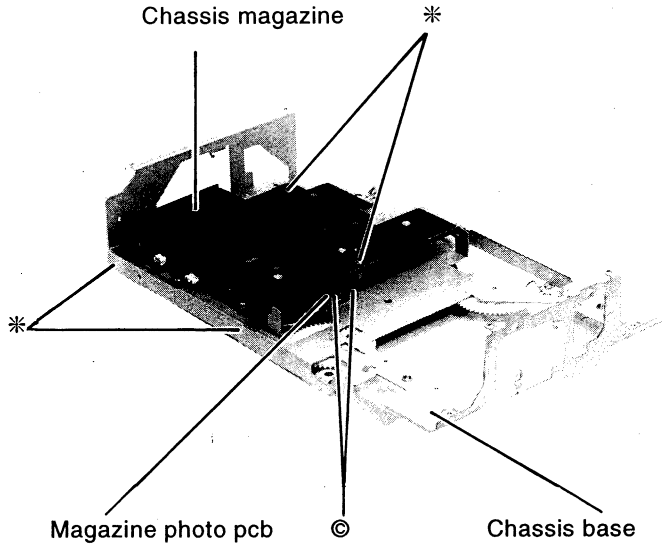

Chassis magazine
✳
✳
Magazine photo pcb
©
Chassis base

Fig 24

11. Checks and adjustments

11.1 Service tools

Test CD "skew disc"	4822 701 11922
Test CD "eccentricity"	4822 701 11923
Test CD "5" & "5A"	4822 397 30096
Test CD "Audio signals 1"	4822 397 30184
Test CD "Max. diameter"	4822 397 60141
Jig height adjustment	4822 395 80412

11.2 Checks

- **Initial start-up, rafoc unit.**

  Insert a magazine with test CD "skew disc".
  Play tracks 1-9 (first 20 min.) without interruptions.

- **Disc drive motor and servo motor.**

  Insert a magazine with test CD "eccentricity".
  Play tracks 1-20 without interruptions.

- **Interruptions, black dots, finger prints.**

  Insert a magazine with test CD "5A".
  Playback tracks 9, 11-17 (prefered: 17), 18, 19 (prefered 19) without interruptions.

- **Min/max read-out diameter.**

  Insert a magazine with test CD "Max. diameter".
  Playback tracks 1 and 14 without interruptions.

- **Specification.**

  Check with test CD "Audio signals 1".

11.3 Adjustments

- **Elevator height (Fig. 25-27)**

  Remove 3 gears D (2 washers A and ring B).
  Rotate 3 gears E and move chassis CR in direction F (to the level of the CD magazine).
  Insert 3 adjustment jigs near gears E between chassis and the chassis CR.
  Adjust each gear E to min. gap and a smooth moving of each jig.
  Adjust gear C to fit H-hole with hole in chassis.
  Mount gears D. Take care there is no gap between gears E and C.
  Fix gears D with the washers/ring.

- **Wow & Flutter (Fig. 28)**

  Set VR103 fully anti-clockwise.
  Insert a magazine with test CD "Audio signals 1".
  Switch to mode playback (track 1).
  Confirm the signal from T.P.1 shows a value on the meter.
  Adjust VR103 to min. value.
  Adjust VR103 to +0.5ns.

- **Tracking balance (fig. 28, 29)**

  Connect T.P.3 - T.P.4 with a wire.
  Insert a magazine with test CD "Audio signals 1".
  Switch to mode playback (track 49).
  Adjust VR101 to max. symmetry (VR=0V).

  Note:
  Remove the wire T.P.3-T.P.4 when finished.

- **Tracking offset (Fig. 28-30)**

  Insert a magazine with test CD 5A.
  Switch to mode playback (track 9).
  Adjust VR102 to min. distortion.
  Adjust VR101 (tracking balance).

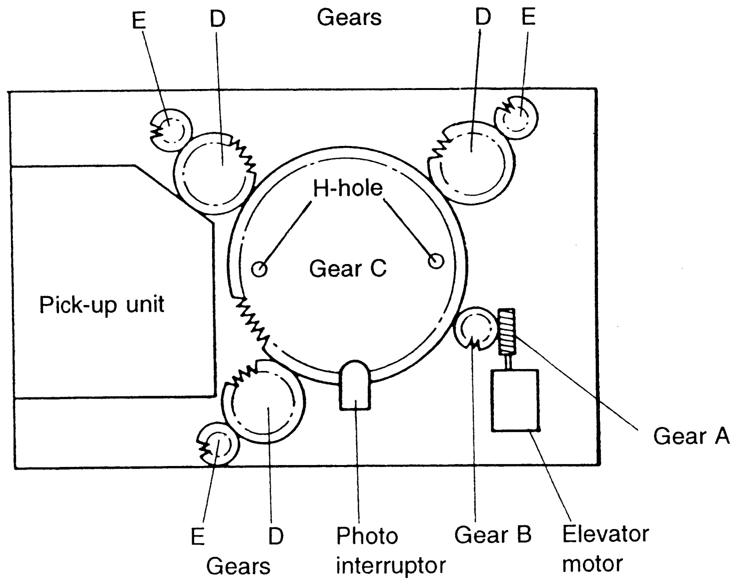

E
D
Gears
D
E
H-hole
Gear C
Pick-up unit
Gear A
E
D
Gears
Photo interruptor
Gear B
Elevator motor

Fig. 25

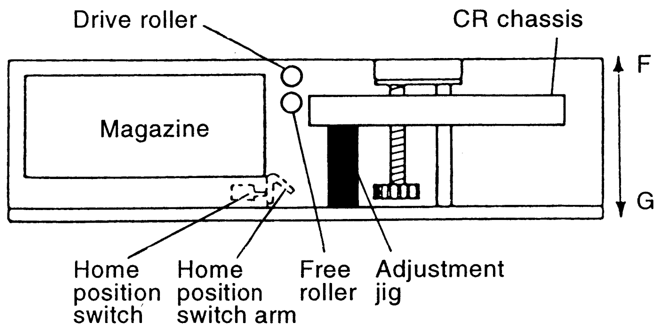

Drive roller
CR chassis
F
Magazine
G
Home position switch
Home position switch arm
Free roller
Adjustment jig

Fig 26

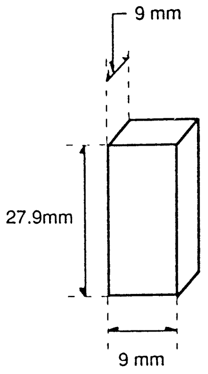

9 mm
27.9mm
9 mm

Fig. 27

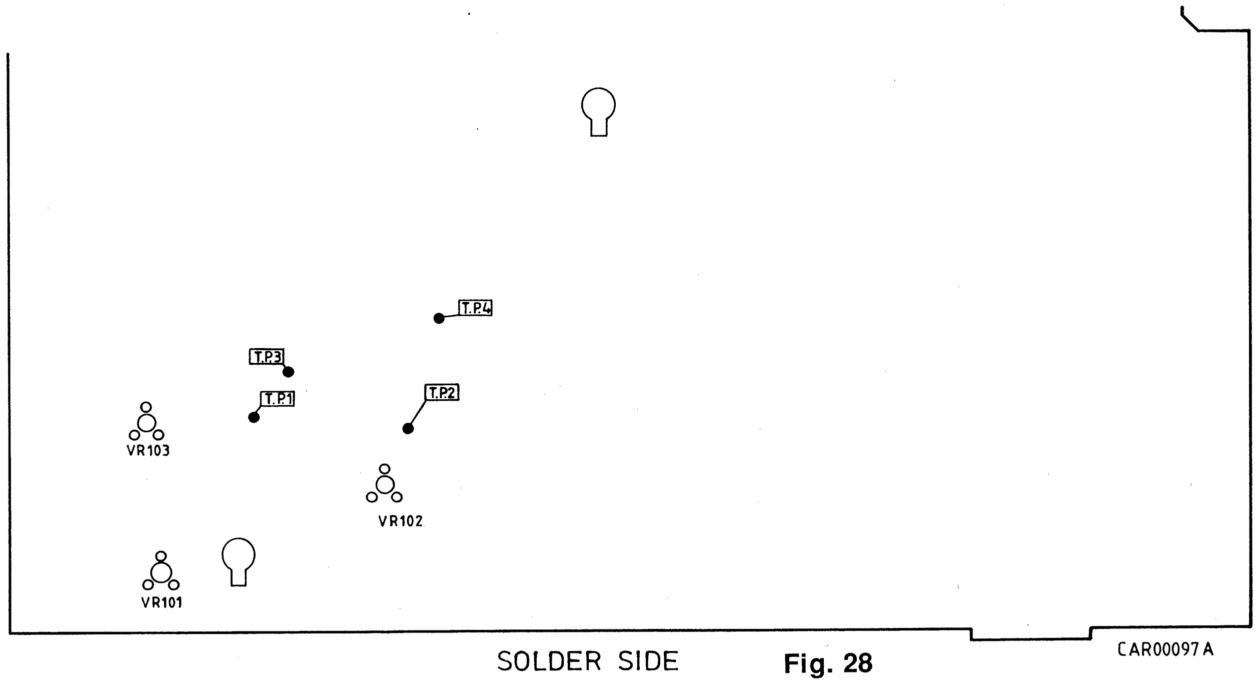

T.P.4
T.P.3
T.P.1
T.P.2
VR103
VR102
VR101
SOLDER SIDE
CAR00097A

Fig. 28

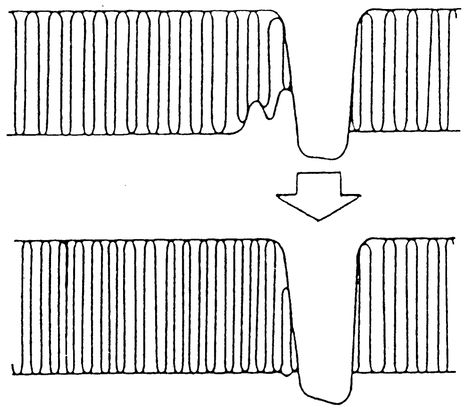


Fig. 29

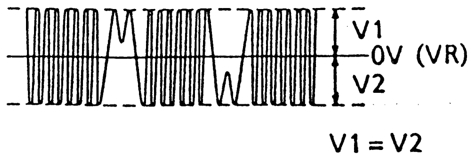
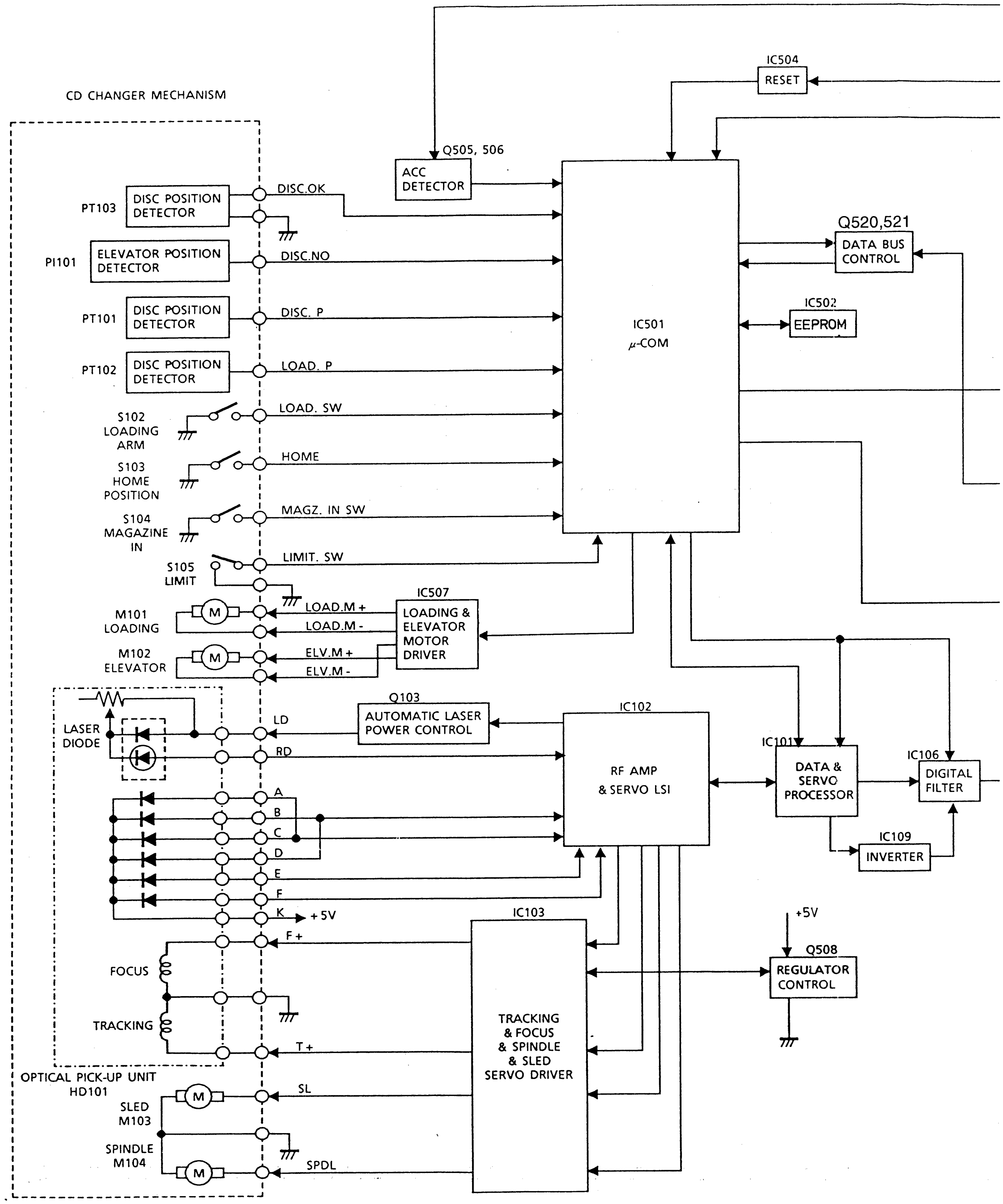
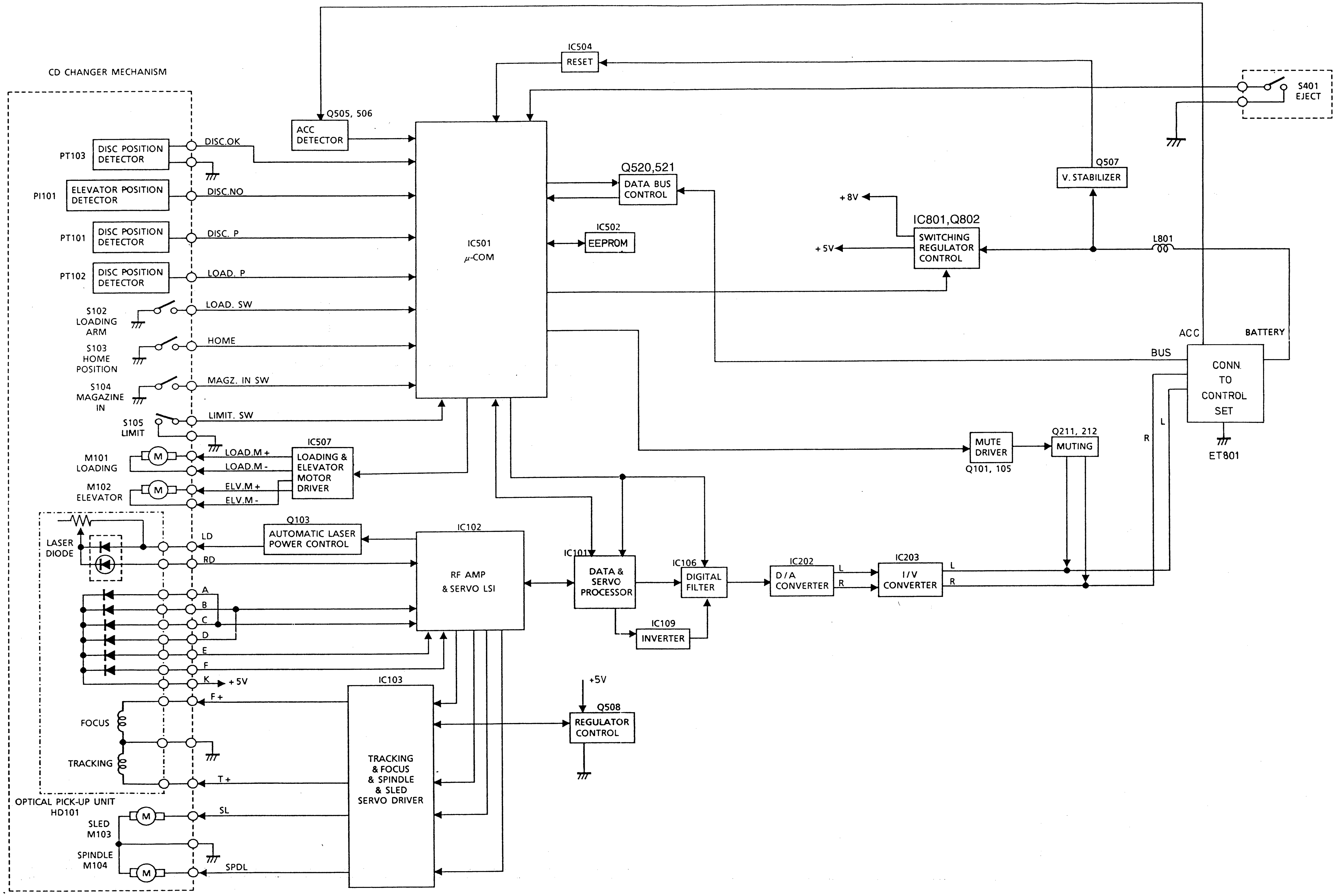


Fig. 30

12. Block diagram

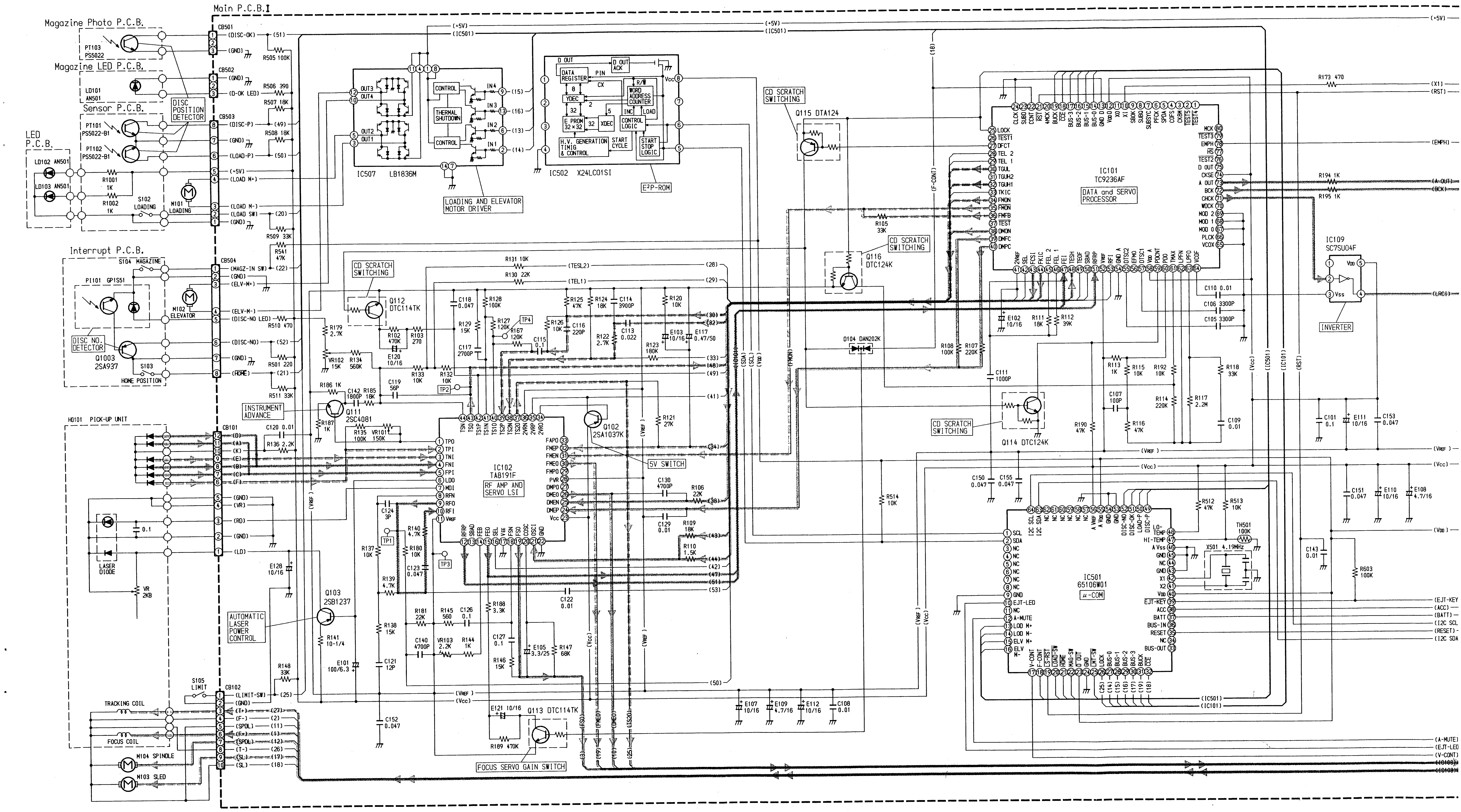

CD CHANGER MECHANISM
PT103
DISC POSITION DETECTOR
DISC.OK
PI101
ELEVATOR POSITION DETECTOR
DISC.NO
PT101
DISC POSITION DETECTOR
DISC. P
PT102
DISC POSITION DETECTOR
LOAD. P
S102 LOADING ARM
LOAD. SW
S103 HOME POSITION
HOME
S104 MAGAZINE IN
MAGZ. IN SW
S105 LIMIT
LIMIT. SW
M101 LOADING
LOAD.M +
LOAD.M -
M102 ELEVATOR
ELV.M +
ELV.M -
IC507
LOADING & ELEVATOR MOTOR DRIVER
LASER DIODE
LD
RD
Q103
AUTOMATIC LASER POWER CONTROL
A
B
C
D
E
F
K
+5V
F +
FOCUS
TRACKING
T +
OPTICAL PICK-UP UNIT HD101
SLED M103
SL
SPINDLE M104
SPDL
Q505, 506
ACC DETECTOR
IC504
RESET
IC501
μ-COM
Q520,521
DATA BUS CONTROL
IC502
EEPROM
IC102
RF AMP & SERVO LSI
IC101
DATA & SERVO PROCESSOR
IC106
DIGITAL FILTER
IC109
INVERTER
IC103
TRACKING & FOCUS & SPINDLE & SLED SERVO DRIVER
+5V
Q508
REGULATOR CONTROL

12. Block diagram

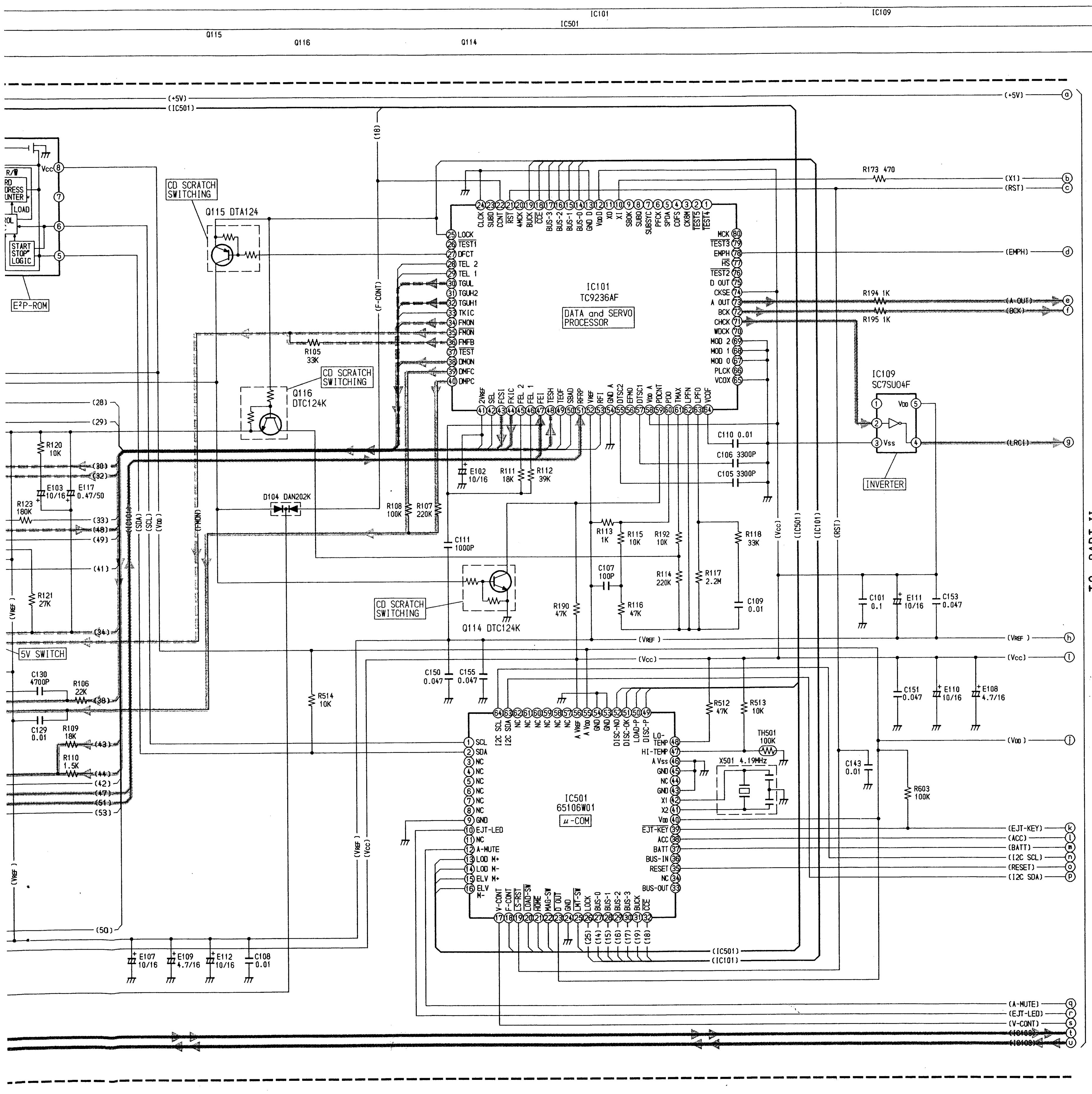

CD CHANGER MECHANISM
PT103
DISC POSITION DETECTOR
DISC.OK
PI101
ELEVATOR POSITION DETECTOR
DISC.NO
PT101
DISC POSITION DETECTOR
DISC. P
PT102
DISC POSITION DETECTOR
LOAD. P
S102 LOADING ARM
LOAD. SW
S103 HOME POSITION
HOME
S104 MAGAZINE IN
MAGZ. IN SW
S105 LIMIT
LIMIT. SW
M101 LOADING
LOAD.M +
LOAD.M -
M102 ELEVATOR
ELV.M +
ELV.M -
IC507
LOADING & ELEVATOR MOTOR DRIVER
LASER DIODE
LD
RD
Q103
AUTOMATIC LASER POWER CONTROL
A
B
C
D
E
F
K
+ 5V
F +
FOCUS
TRACKING
T +
OPTICAL PICK-UP UNIT HD101
SLED M103
SL
SPINDLE M104
SPDL
M
ACC DETECTOR
Q505, 506
IC504
RESET
IC501 μ-COM
Q520,521
DATA BUS CONTROL
IC502
EEPROM
IC102
RF AMP & SERVO LSI
IC103
TRACKING & FOCUS & SPINDLE & SLED SERVO DRIVER
IC101
DATA & SERVO PROCESSOR
IC106
DIGITAL FILTER
IC109
INVERTER
IC202
D/A CONVERTER
IC203
I/V CONVERTER
L
R
+5V
Q508
REGULATOR CONTROL
MUTE DRIVER
Q101, 105
Q211, 212
MUTING
+ 8V
+ 5V
IC801,Q802
SWITCHING REGULATOR CONTROL
L801
Q507
V. STABILIZER
S401 EJECT
ACC
BATTERY
BUS
CONN. TO CONTROL SET
ET801

3. Circuit diagram I

IC				IC507	IC102	IC502					IC501	IC101	IC109
Transistor (Q,PT,PI)	PT103 PT101 PT102 PI101 Q1003	Q103	Q111	Q112		Q113	Q102	Q115	Q116	Q114			



Main P.C.B.I
Magazine Photo P.C.B.
PT103 PS5022
Magazine LED P.C.B.
LD101 AN501
Sensor P.C.B.
PT101 PS5022-B1
PT102 PS5022-B1
DISC POSITION DETECTOR
LED P.C.B.
LD102 AN501
LD103 AN501
R1001 1K
R1002 1K
S102 LOADING
M101 LOADING
Interrupt P.C.B.
S104 MAGAZINE
PI101 GP1S51
M102 ELEVATOR
DISC NO. DETECTOR
Q1003 2SA937
S103 HOME POSITION
H0101 PICK-UP UNIT
LASER DIODE
VR 2KB
S105 LIMIT
TRACKING COIL
FOCUS COIL
M104 SPINDLE
M103 SLED
CB501
CB502
CB503
CB504
CB101
CB102
IC507 LB1836M
LOADING AND ELEVATOR MOTOR DRIVER
IC502 X24LC01SI
E²P-ROM
CD SCRATCH SWITCHING
Q115 DTA124
Q116 DTC124K
Q112 DTC114TK
Q111 2SC4081
INSTRUMENT ADVANCE
IC102 TA8191F
RF AMP AND SERVO LSI
Q102 2SA1037K
5V SWITCH
Q103 2SB1237
AUTOMATIC LASER POWER CONTROL
Q113 DTC114TK
FOCUS SERVO GAIN SWITCH
D104 DAN202K
IC101 TC9236AF
DATA and SERVO PROCESSOR
Q114 DTC124K
IC109 SC7SU04F
INVERTER
IC501 65106W01
µ-COM
X501 4.19MHz
TH501 100K
(+5V)
(IC501)
(X1)
(RST)
(EMPH)
(A-OUT)
(BCK)
(LRCK)
(VREF)
(Vcc)
(VDD)
(EJT-KEY)
(ACC)
(BATT)
(I2C SCL)
(RESET)
(I2C SDA)
(A-MUTE)
(EJT-LED)
(V-CONT)


IC101
IC501
IC109
Q115
Q116
Q114
(+5V)
(IC501)
CD SCRATCH SWITCHING
Q115 DTA124
Q116 DTC124K
Q114 DTC124K
E²P-ROM
START STOP LOGIC
5V SWITCH
IC101
TC9236AF
DATA and SERVO PROCESSOR
IC109
SC7SU04F
INVERTER
IC501
65106W01
µ-COM
D104 DAN202K
X501 4.19MHz
TH501 100K
R173 470
R194 1K
R195 1K
R105 33K
R120 10K
R121 27K
R123 180K
R106 22K
R109 18K
R110 1.5K
R107 220K
R108 100K
R111 18K
R112 39K
R113 1K
R115 10K
R192 10K
R118 33K
R114 220K
R117 2.2M
R116 47K
R190 47K
R512 47K
R513 10K
R514 10K
R603 100K
E102 10/16
E103 10/16
E117 0.47/50
E107 10/16
E109 4.7/16
E112 10/16
E111 10/16
E110 10/16
E108 4.7/16
C101 0.1
C105 3300P
C106 3300P
C107 100P
C108 0.01
C109 0.01
C110 0.01
C111 1000P
C129 0.01
C130 4700P
C143 0.01
C150 0.047
C151 0.047
C153 0.047
C155 0.047
(X1)
(RST)
(EMPH)
(A-OUT)
(BCK)
(LRCK)
(VREF)
(Vcc)
(VDD)
(EJT-KEY)
(ACC)
(BATT)
(I2C SCL)
(RESET)
(I2C SDA)
(A-MUTE)
(EJT-LED)
(V-CONT)
(IC101)
(F-CONT)
(FMON)
TO PART II
a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p
q
r
s
t
u

IC101

1	NC	17	PS	33	2.05V	49	2.1V	65	0V
2	NC	18	PS	34	2.07V	50	2.1V	66	NC
3	NC	19	PS	35	2.1V	51	2.2V	67	0V
4	NC	20	NC	36	2.1V	52	2.1V	68	0V
5	NC	21	4.8V	37	NC	53	2.5V	69	0V
6	NC	22	0V	38	2.1V	54	0V	70	NC
7	NC	23	NC	39	PS	55	2.53V	71	PS
8	NC	24	0V	40	PS	56	NC	72	PS
9	NC	25	PS	41	4.2V	57	2.53V	73	PS
10	PS	26	NC	42	5V	58	5V	74	5V
11	NC	27	PS	43	2.5V	59	PS	75	PS
12	5V	28	2.1V	44	2.5V	60	PS	76	NC
13	0V	29	2.1V	45	2.1V	61	2.1V	77	NC
14	PS	30	2.1V	46	2.1V	62	2.1V	78	5V
15	PS	31	NC	47	2.1V	63	2V	79	NC
16	PS	32	2.1V	48	2.1V	64	2.2V	80	NC

IC102

1	1.8V	16	5V	31	2.1V
2	2.1V	17	0V	32	2.09V
3	2.1V	18	2.1V	33	NC
4	2.1V	19	2.2V	34	4.45V
5	2.1V	20	2.15V	35	4.19V
6	3.95V	21	2.52V	36	2.1V
7	0.18V	22	0V	37	2.05V
8	2.1V	23	5.03V	38	2.09V
9	2.45V	24	2.17V	39	2.09V
10	2.1V	25	2.17V	40	2.09V
11	2.1V	26	2.35V	41	2.09V
12	2.2V	27	NC	42	2.09V
13	NC	28	2.1V	43	2.1V
14	2.08V	29	NC	44	2.1V
15	2.11V	30	2.05V		

IC109

1	NC
2	PS
3	0V
4	PS
5	5V

IC501

1	4.86V	17	4.81V	33	PS	49	4.99V
2	4.86V	18	0V	34	NC	50	0.14V
3	NC	19	4.85V	35	4.86V	51	0.17V
4	NC	20	0V	36	PS	52	5.03V
5	NC	21	0V	37	4.88V	53	0V
6	NC	22	0V	38	4.85V	54	0V
7	NC	23	4.86V	39	4.81V	55	5.03V
8	NC	24	0V	40	4.86V	56	5.03V
9	0V	25	5.02V	41	PS	57	NC
10	4.82V	26	5V	42	PS	58	NC
11	NC	27	PS	43	0V	59	NC
12	0V	28	PS	44	NC	60	NC
13	4.84V	29	PS	45	0V	61	NC
14	4.84V	30	PS	46	0V	62	NC
15	4.84V	31	PS	47	4.31V	63	NC
16	4.84V	32	PS	48	5.01V	64	NC

IC502

1	NC
2	NC
3	NC
4	0V
5	4.86V
6	4.86V
7	NC
8	4.85V

IC507

1	7.34V	8	7.34V
2	4.83V	9	4.83V
3	0V	10	0V
4	7.34V	11	7.34V
5	0V	12	0V
6	4.83V	13	4.83V
7	0V	14	0V

	E	C	B
Q102	5.03V	4.2V	4.44V
Q103	4.5V	1.8V	3.95V
Q111	1.4V	1.4V	1.8V
Q112	2.1V	2.05V	PS
Q113	2.1V	2.05V	PS
Q114	0V	PS	PS
Q115	PS	0V	PS
Q116	2.09V	2.1V	PS
Q1003	PS	0V	0.2V

Mode: playback (test CD audio signals disc 1,
track no.1 1 kHz

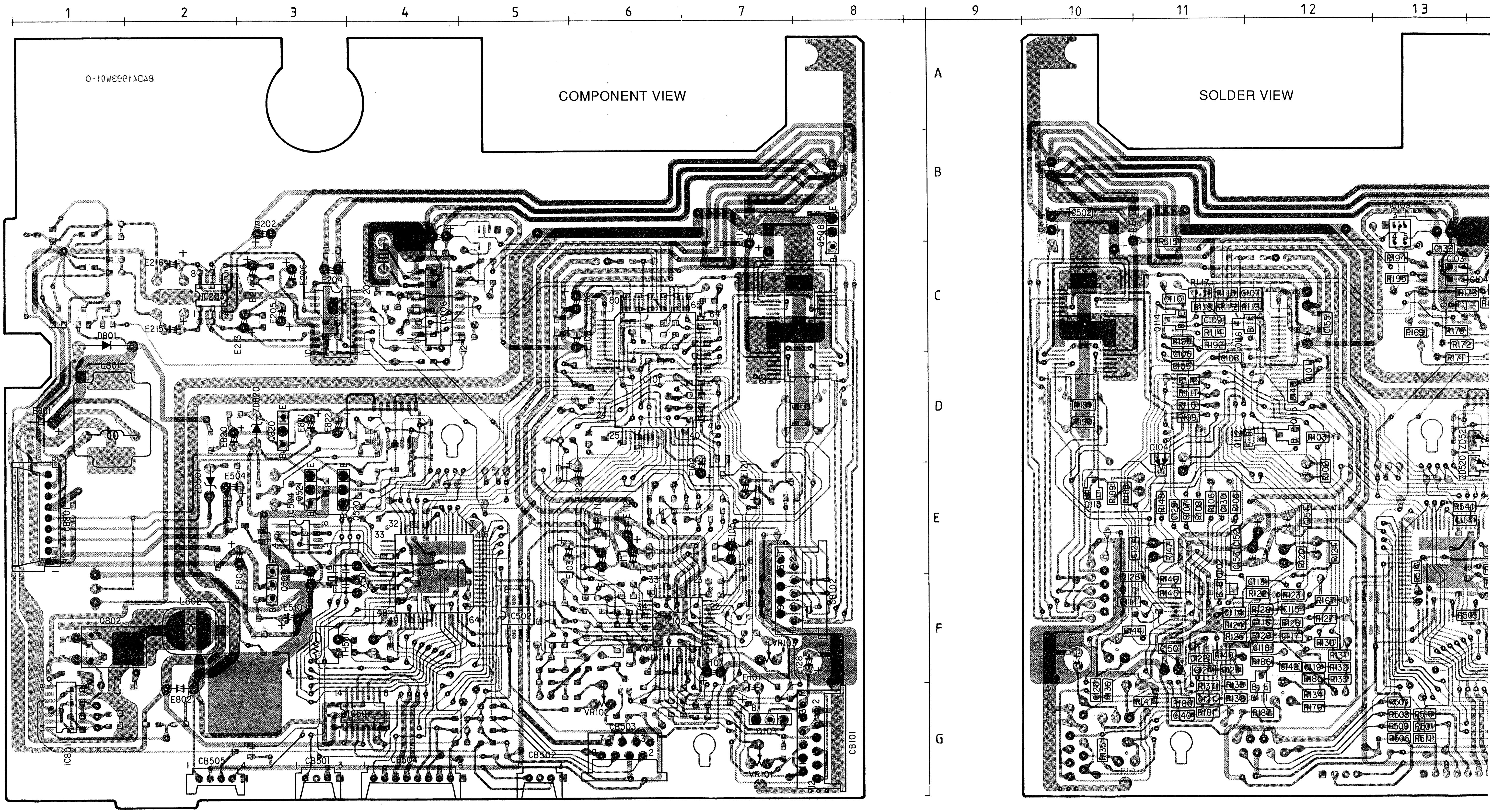
Ⓥ E.V.M.

All resistor values are in Ohm; K = 1000
All capacitor values are in µF; P = 0.000001

▬ CD Signal Line (Digital)
▭ Focus Error Signal Line
▭ Tracking Error Signal Line
▭ Spindle Drive Signal Line
▬ Sled Drive Signal Line

14. Layout main PCB

C101	D12
C103	C13
C104	C13
C105	D11
C106	D11
C107	C11
C108	D11
C108	D11
C109	C11
C110	C11
C111	F10
C113	F12
C114	F11
C115	F12
C116	F12
C117	F12
C118	F12
C119	F12
C121	G11
C122	F11
C123	F11
C124	F11
C126	F10
C127	E10
C129	E11
C130	E11
C133	C13
C140	G11
C142	F12
C143	D12
C150	F11
C151	E12
C152	E11
C153	E11
C155	C12
C201	G10
C204	C14
C208	C14
C211	C15
C212	C15
C213	C16
C214	B16
C215	C15
C216	C15
C501	E14
C502	B10
C801	F17
C802	G17
C803	G17
C804	G16
C805	E14
D104	E11
D520	D14
D801	C1
D802	F16
E102	E7
E103	E5
E105	E7
E107	F7
E108	C6
E109	C6
E110	E6
E111	E6
E112	E6
E113	B7
E117	E6
E120	E6
E121	E7
E128	F8
E144	B4
E202	B3
E204	C3
E205	C3
E206	C3
E213	C3
E214	C3
E215	C2
E504	E2
E510	F3
E511	B8
E801	D1
E802	G2
E804	E2
E808	F3
E820	D2
E821	D3
E822	D3
IC101	D6
IC102	F6
IC103	C8
IC106	C4
IC109	B13
IC202	C3
IC203	C2
IC501	E4
IC502	F5
IC504	E3
IC507	G4
IC801	G1
L801	D1
L802	F2
Q101	C16
Q102	F11
Q103	G7
Q105	C16
Q111	G12
Q112	D12
Q113	E10
Q114	C11
Q115	D12
Q116	C11
Q211	C17
Q212	B17
Q401	G15
Q505	E15
Q506	E15
Q507	F3
Q508	B8
Q520	E3
Q521	E3
Q802	F1
Q820	D3
R102	E12
R103	D12
R105	E11
R106	E11
R107	E11
R108	G11
R108	E11
R109	D11
R110	D11
R111	D11
R112	D11
R113	C11
R114	C11
R115	C11
R116	C11
R117	C11
R118	C11
R120	E12
R121	E12
R122	F12
R123	F12
R124	F11
R125	F11
R126	F12
R127	F12
R128	F12
R129	F12
R130	F12
R131	F12
R132	F12
R133	F12
R134	G12
R135	G10
R136	G10
R137	G11
R138	G11
R139	G11
R140	F11
R141	G11
R144	F10
R145	F11
R146	F11
R147	E11
R148	E11
R150	D10
R167	F12
R169	C13
R170	C13
R171	D13
R172	C13
R173	C13
R175	C14
R179	G12
R181	G11
R185	F12
R186	F12
R187	G12
R188	E10
R189	E10
R190	C11
R192	C1
R194	C1
R195	C1
R217	C1
R218	C1
R225	C1
R226	B1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COMPONENT VIEW
SOLDER VIEW
E202
E216
E215
IC203
E205
E204
E206
E213
IC106
D801
L801
E801
CB801
Z0820
Q820
E820
E821
E822
Z0501
E504
Q521
Q520
C504
IC501
E804
Q501
E510
L802
Q802
E802
IC801
IC507
CB505
CB501
CB504
CB502
CB503
IC502
IC101
IC102
E108
E109
VR102
VR101
VR103
Q103
E101
CB101
CB102
Q508
E511
C502
R515
IC109
R194
R195
C133
C103
Q114
C110
C109
C106
C105
C108
C107
R117
R118
R115
R116
R113
R114
R120
R192
R112
R111
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R169
R170
R171
R172
R175
R103
R102
D104
Q116
Q115
R188
R189
R149
R148
C129
R107
R108
R106
C130
C155
C154
C153
C152
R147
C127
C128
C111
R146
R145
R144
C150
Q102
C113
R122
R123
C115
R126
C116
R124
R125
C129
C117
R167
R127
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R133
C118
R186
C142
C119
R185
R140
R134
R179
R136
R141
R137
R138
R139
R180
R181
R187
C146
C120
R135
R507
R508
R509
R510
R501
R506
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R540
R505
R514
R150
R151
R189

14. Layout main PCB

C101	D12
C103	C13
C104	C13
C105	D11
C106	D11
C107	C11
C108	D11
C108	D11
C109	C11
C110	C11
C111	F10
C113	F12
C114	F11
C115	F12
C116	F12
C117	F12
C118	F12
C119	F12
C121	G11
C122	F11
C123	F11
C124	F11
C126	F10
C127	E10
C129	E11
C130	E11
C133	C13
C140	G11
C142	F12
C143	D12
C150	F11
C151	E12
C152	E11
C153	E11
C155	C12
C201	G10
C204	C14
C208	C14
C211	C15
C212	C15
C213	C16
C214	B16
C215	C15
C216	C15
C501	E14
C502	B10
C801	F17
C802	G17
C803	G17
C804	G16
C805	E14
D104	E11
D520	D14
D801	C1
D802	F16
E102	E7
E103	E5
E105	E7
E107	F7
E108	C6
E109	C6
E110	E6
E111	E6
E112	E6
E113	B7
E117	E6
E120	E6
E121	E7
E128	F8
E144	B4
E202	B3
E204	C3
E205	C3
E206	C3
E213	C3
E214	C3
E215	C2
E504	E2
E510	F3
E511	B8
E801	D1
E802	G2
E804	E2
E808	F3
E820	D2
E821	D3
E822	D3
IC101	D6
IC102	F6
IC103	C8
IC106	C4
IC109	B13
IC202	C3
IC203	C2
IC501	E4
IC502	F5
IC504	E3
IC507	G4
IC801	G1
L801	D1
L802	F2
Q101	C16
Q102	F11
Q103	G7
Q105	C16
Q111	G12
Q112	D12
Q113	E10
Q114	C11
Q115	D12
Q116	C11
Q211	C17
Q212	B17
Q401	G15
Q505	E15
Q506	E15
Q507	F3
Q508	B8
Q520	E3
Q521	E3
Q802	F1
Q820	D3
R102	E12
R103	D12
R105	E11
R106	E11
R107	E11
R108	G11
R108	E11
R109	D11
R110	D11
R111	D11
R112	D11
R113	C11
R114	C11
R115	C11
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R117	C11
R118	C11
R120	E12
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R150	D10
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R171	D13
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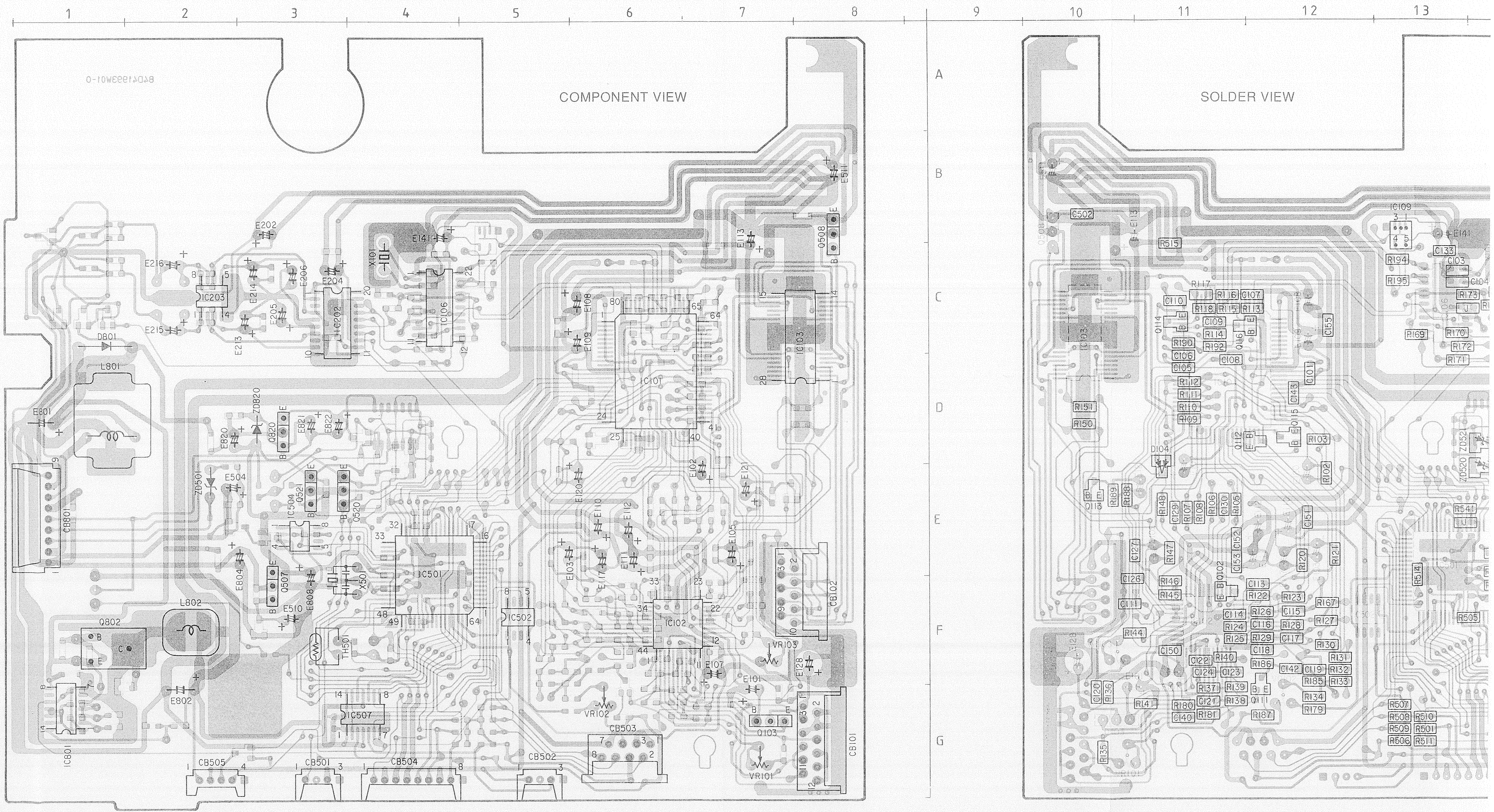
R173	C13
R175	C14
R179	G12
R181	G11
R185	F12
R186	F12
R187	G12
R188	E10
R189	E10
R190	C11
R192	C1
R194	C1
R195	C1
R217	C1
R218	C1
R225	C1
R226	B1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COMPONENT VIEW
SOLDER VIEW
IC203
IC202
IC106
IC101
IC103
IC501
IC502
IC102
IC504
IC507
IC801
IC109
L801
L802
D801
ZD820
ZD501
Q802
Q820
Q520
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Q508
Q103
X101
X501
TH501
VR101
VR102
VR103
CB801
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C502
R515
R194
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C133
C103
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C106
C108
C105
C155
R112
R111
R110
R109
C143
C101
R151
R150
D104
Q112
Q115
R103
R102
Q113
R189
R188
R148
C129
R107
R108
R106
C130
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R541
C126
R146
R145
C111
Q102
C113
R122
R123
C115
R167
C114
R126
C116
R128
R127
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R124
C117
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C124
Q123
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C142
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C121
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C120
R136
R180
C140
R181
R187
Q111
R507
R508
R510
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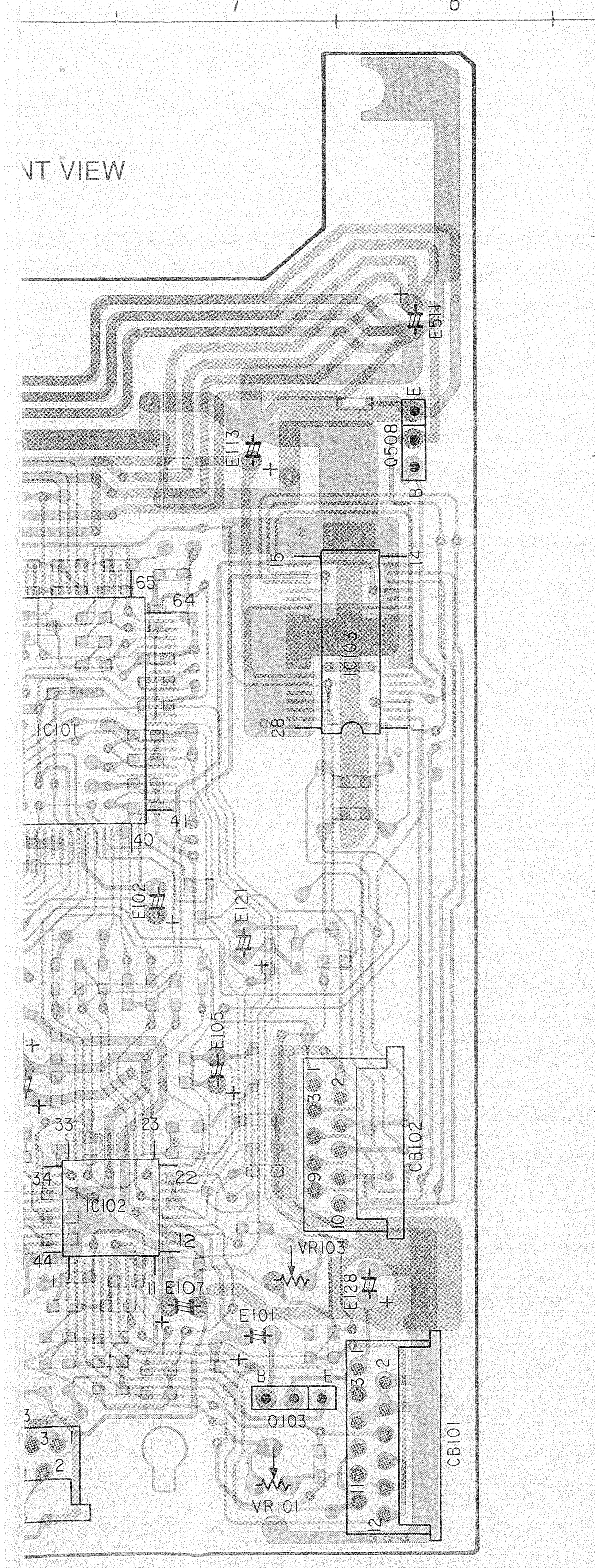
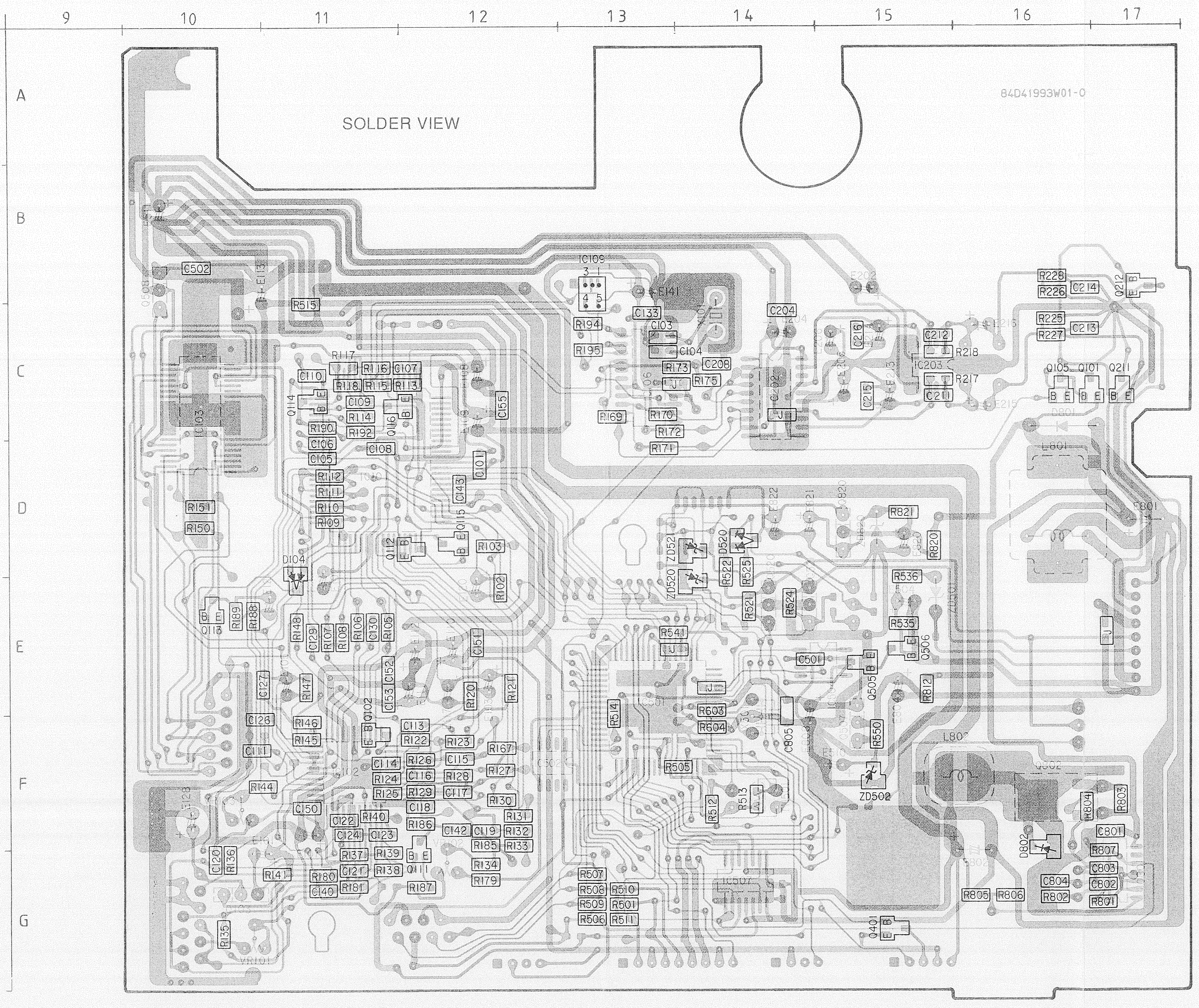
R501
R506
R511
R135

E2	E820	D2	IC109	B13	IC801	G1	Q111	G12	Q212	B17	Q521	E3	R107	E11	R113	C11	R121	E12	R128	F12	R135	G10	R144	F10	R169	C13	R181	G11	R192	C11	R227	C16	R509	G13	R515	C11	R603	E14	R804	F16	TH501	F3	ZD502	F15
F3	E821	D3	IC202	C3	L801	D1	Q112	D12	Q401	G15	Q802	F1	R108	G11	R114	C11	R122	F12	R129	F12	R136	G10	R145	F11	R170	C13	R185	F12	R194	C13	R228	B16	R51	D10	R521	E14	R604	F14	R805	G16	VR101	G7	ZD520	D14
B8	E822	D3	IC203	C2	L802	F2	Q113	E10	Q505	E15	Q820	D3	R108	E11	R115	C11	R123	F12	R130	F12	R137	G11	R146	F11	R171	D13	R186	F12	R195	C13	R501	G13	R510	G13	R524	E14	R622	D14	R806	G16	VR102	G6	ZD521	D14
D1	IC101	D6	IC501	E4	Q101	C16	Q114	C11	Q506	E15	R102	E12	R109	D11	R116	C11	R124	F11	R131	F12	R138	G11	R147	E11	R172	C13	R187	G12	R217	C15	R505	F13	R511	G13	R535	E15	R625	D14	R807	F17	VR103	F7	ZD820	D3
G2	IC102	F6	IC502	F5	Q102	F11	Q115	D12	Q507	F3	R103	D12	R110	D11	R117	C11	R125	F11	R132	F12	R139	G11	R148	E11	R173	C13	R188	E10	R218	C15	R506	G13	R512	F14	R536	D15	R801	G17	R812	E15	X101	C4		
E2	IC103	C8	IC504	E3	Q103	G7	Q116	C11	Q508	B8	R105	E11	R111	D11	R118	C11	R126	F12	R133	F12	R140	F11	R150	D10	R175	C14	R189	E10	R225	C16	R507	G13	R513	F14	R541	E13	R802	G16	R820	D15	X501	F3		
F3	IC106	C4	IC507	G4	Q105	C16	Q211	C17	Q520	E3	R106	E11	R112	D11	R120	E12	R127	F12	R134	G12	R141	G11	R167	F12	R179	G12	R190	C11	R226	B16	R508	G13	R514	E13	R550	F15	R803	F17	R821	D15	ZD501	E2		



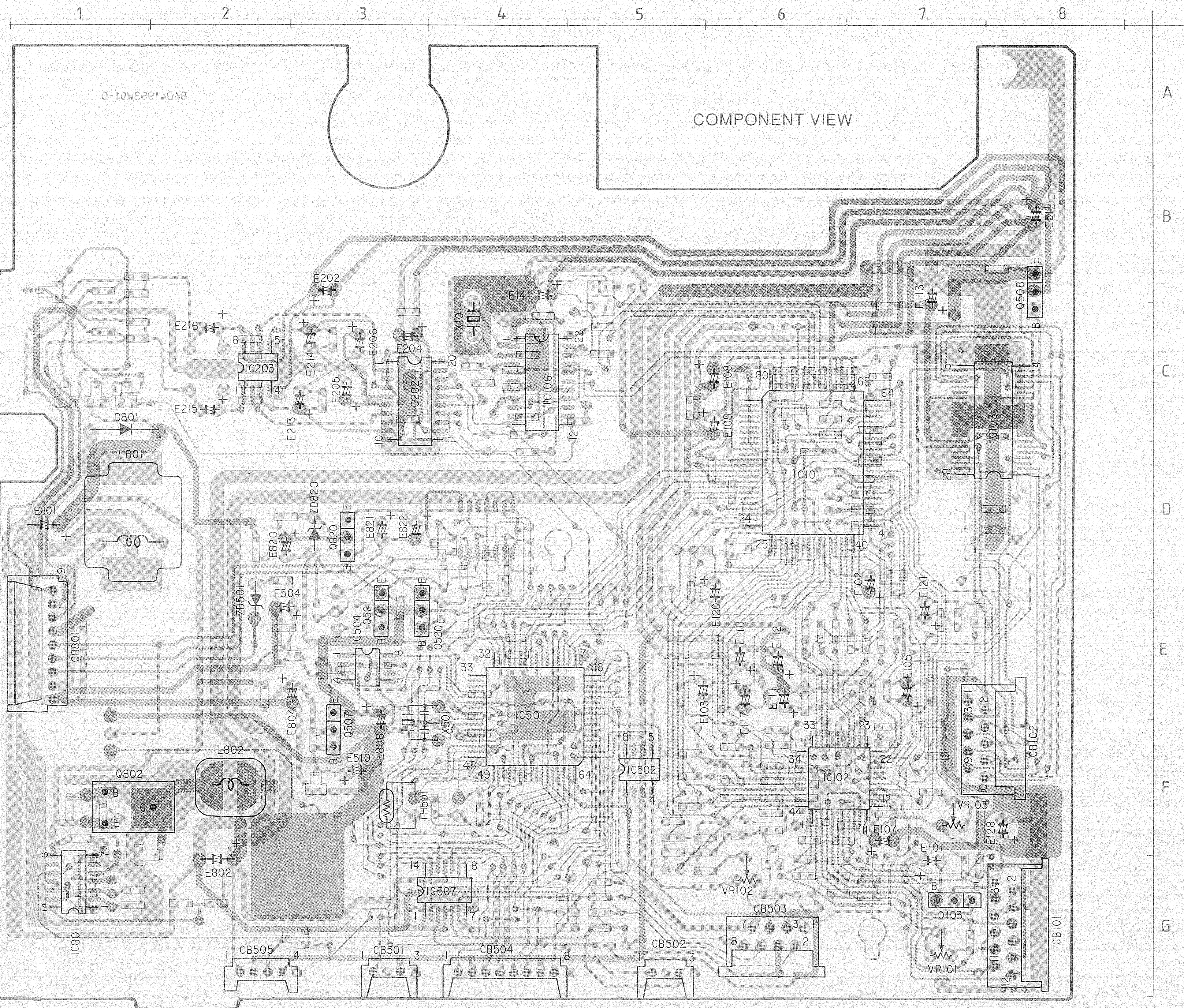


14. Layout main PCB

C101	D12	C108	D11	C116	F12	C124	F11	C142	F12	C201	G10	C215	C15	C804	G16	E103	E5
C103	C13	C109	C11	C117	F12	C126	F10	C143	D12	C204	C14	C216	C15	C805	E14	E105	E7
C104	C13	C110	C11	C118	F12	C127	E10	C150	F11	C208	C14	C501	E14	D104	E11	E107	F7
C105	D11	C111	F10	C119	F12	C129	E11	C151	E12	C211	C15	C502	B10	D520	D14	E108	C6
C106	D11	C113	F12	C121	G11	C130	E11	C152	E11	C212	C15	C801	F17	D801	C1	E109	C6
C107	C11	C114	F11	C122	F11	C133	C13	C153	E11	C213	C16	C802	G17	D802	F16	E110	E6
C108	D11	C115	F12	C123	F11	C140	G11	C155	C12	C214	B16	C803	G17	E102	E7	E111	E6

E112	E6	E202	B3	E504	E2	E820	D2	IC109	B13	IC801	G1	Q111	G12	Q212	B17	Q521	E3
E113	B7	E204	C3	E510	F3	E821	D3	IC202	C3	L801	D1	Q112	D12	Q401	G15	Q802	F1
E117	E6	E205	C3	E511	B8	E822	D3	IC203	C2	L802	F2	Q113	E10	Q505	E15	Q820	D3
E120	E6	E206	C3	E801	D1	IC101	D6	IC501	E4	Q101	C16	Q114	C11	Q506	E15	R102	E12
E121	E7	E213	C3	E802	G2	IC102	F6	IC502	F5	Q102	F11	Q115	D12	Q507	F3	R103	D12
E128	F8	E214	C3	E804	E2	IC103	C8	IC504	E3	Q103	G7	Q116	C11	Q508	B8	R105	E11
E144	B4	E215	C2	E808	F3	IC106	C4	IC507	G4	Q105	C16	Q211	C17	Q520	E3	R106	E11

R107	E11	R113	C11	R121	E12	R128	F12	R135	G10	R144	F10	R169	C13	R181	G11	R192	C1
R108	G11	R114	C11	R122	F12	R129	F12	R136	G10	R145	F11	R170	C13	R185	F12	R194	C1
R108	E11	R115	C11	R123	F12	R130	F12	R137	G11	R146	F11	R171	D13	R186	F12	R195	C1
R109	D11	R116	C11	R124	F11	R131	F12	R138	G11	R147	E11	R172	C13	R187	G12	R217	C1
R110	D11	R117	C11	R125	F11	R132	F12	R139	G11	R148	E11	R173	C13	R188	E10	R218	C1
R111	D11	R118	C11	R126	F12	R133	F12	R140	F11	R150	D10	R175	C14	R189	E10	R225	C1
R112	D11	R120	E12	R127	F12	R134	G12	R141	G11	R167	F12	R179	G12	R190	C11	R226	B1


COMPONENT VIEW
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IC203
IC202
IC106
IC101
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IC801
L801
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Q802
D801
X101
X501
Q508
Q820
Q521
Q520
Q507
Q103
ZD501
ZD820
TH501
VR101
VR102
VR103
E202
E216
E215
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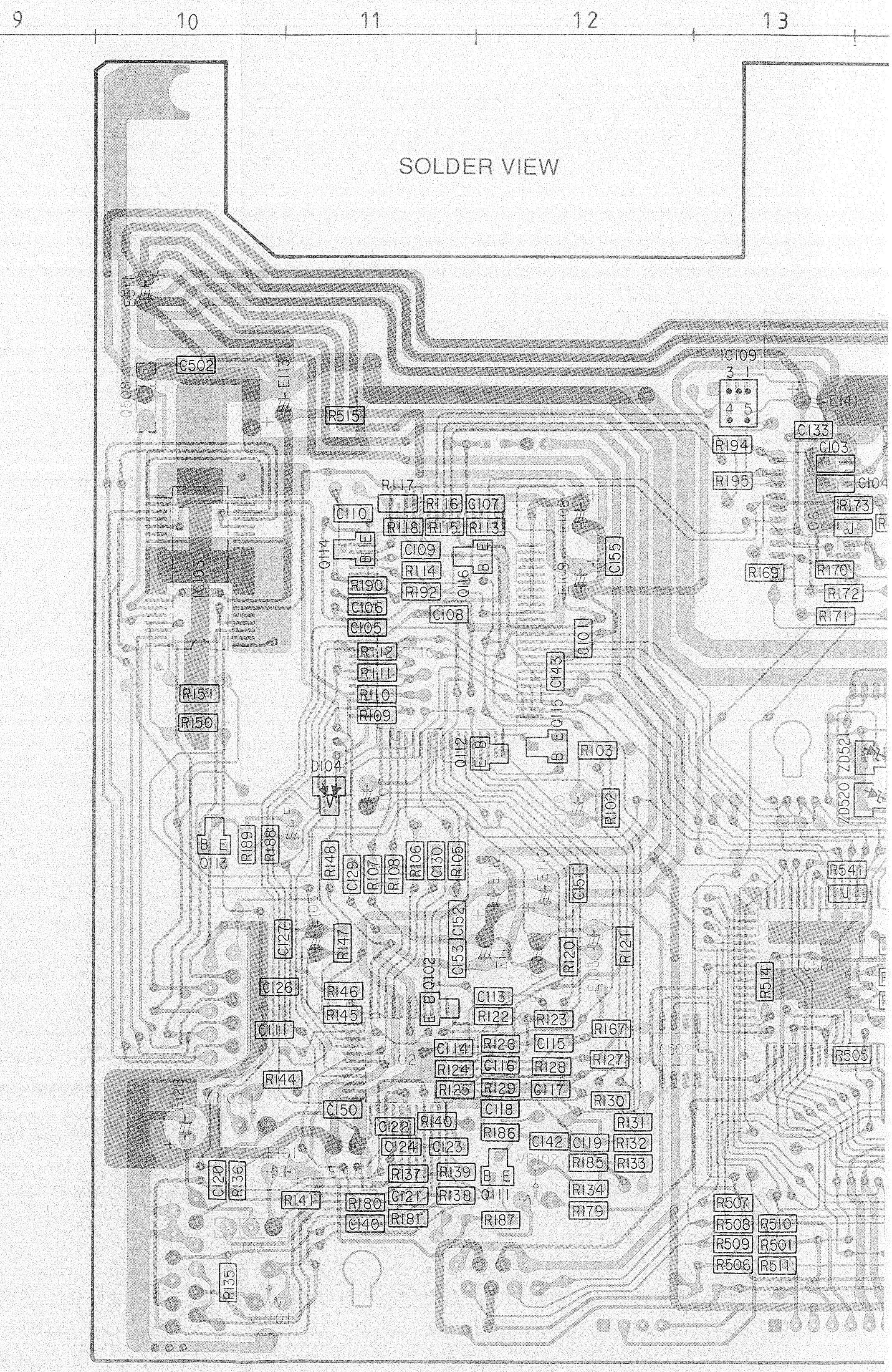
CB503
CB101
CB102


SOLDER VIEW
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11
12
13
C502
R515
IC109
R194
R195
C133
C103
R117
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C107
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R115
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C106
C105
C108
R112
R111
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C155
C143
R101
R169
R170
R173
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R150
D104
R103
R102
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R188
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C129
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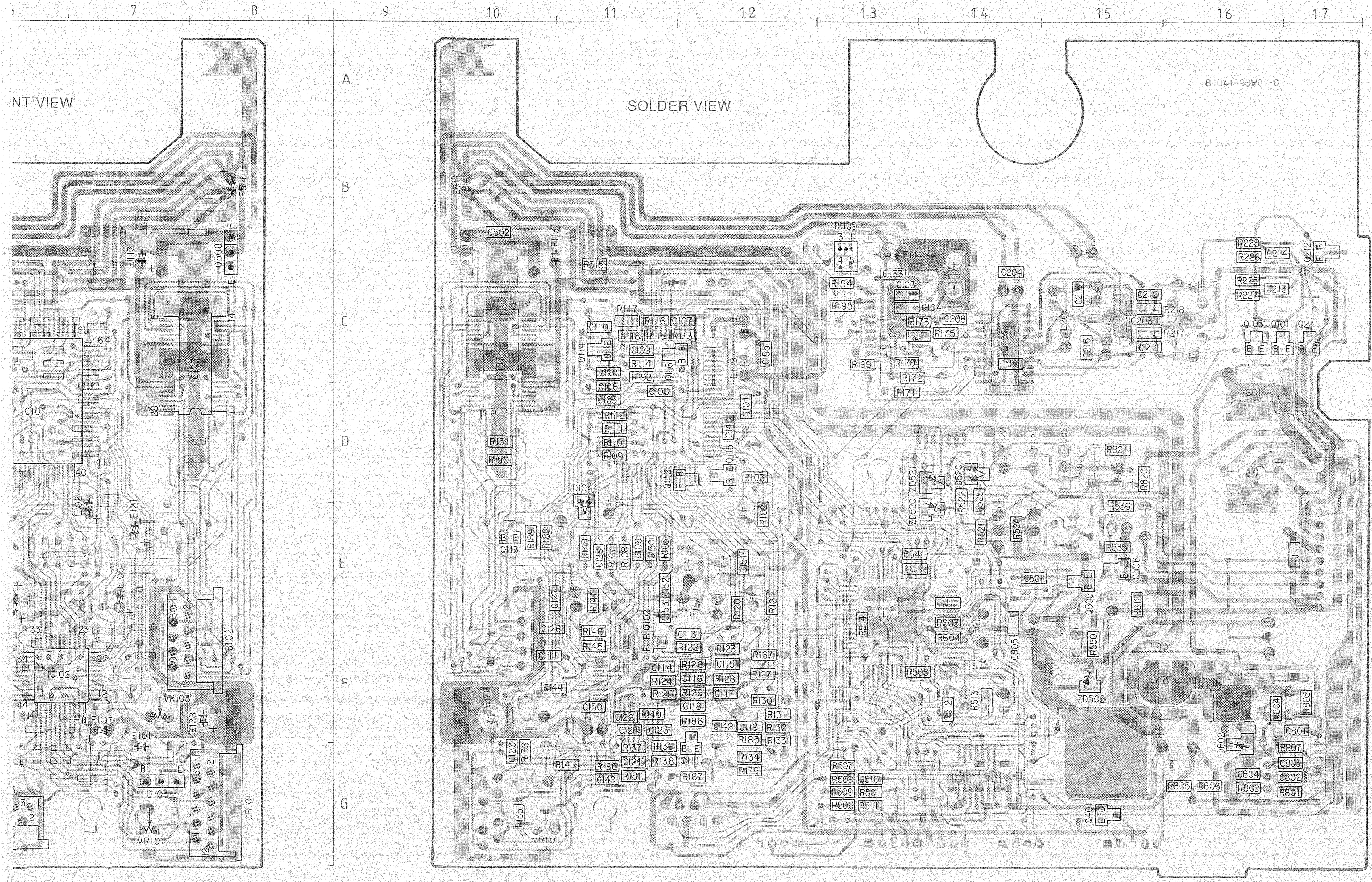
R541

PCS 74 087

4	E2	E820	D2	IC109	B13	IC801	G1	Q111	G12	Q212	B17	Q521	E3	R107	E11	R113	C11	R121	E12	R128	F12	R135	G10	R144	F10	R169	C13	R181	G11	R192	C11	R227	C16	R509	G13	R515	C11	R603	E14	R804	F16	TH501	F3	ZD502	F15
0	F3	E821	D3	IC202	C3	L801	D1	Q112	D12	Q401	G15	Q802	F1	R108	G11	R114	C11	R122	F12	R129	F12	R136	G10	R145	F11	R170	C13	R185	F12	R194	C13	R228	B16	R51	D10	R521	E14	R604	F14	R805	G16	VR101	G7	ZD520	D14
1	B8	E822	D3	IC203	C2	L802	F2	Q113	E10	Q505	E15	Q820	D3	R108	E11	R115	C11	R123	F12	R130	F12	R137	G11	R146	F11	R171	D13	R186	F12	R195	C13	R501	G13	R510	G13	R524	E14	R622	D14	R806	G16	VR102	G6	ZD521	D14
1	D1	IC101	D6	IC501	E4	Q101	C16	Q114	C11	Q506	E15	R102	E12	R109	D11	R116	C11	R124	F11	R131	F12	R138	G11	R147	E11	R172	C13	R187	G12	R217	C15	R505	F13	R511	G13	R535	E15	R625	D14	R807	F17	VR103	F7	ZD820	D3
2	G2	IC102	F6	IC502	F5	Q102	F11	Q115	D12	Q507	F3	R103	D12	R110	D11	R117	C11	R125	F11	R132	F12	R139	G11	R148	E11	R173	C13	R188	E10	R218	C15	R506	G13	R512	F14	R536	D15	R801	G17	R812	E15	X101	C4		
4	E2	IC103	C8	IC504	E3	Q103	G7	Q116	C11	Q508	B8	R105	E11	R111	D11	R118	C11	R126	F12	R133	F12	R140	F11	R150	D10	R175	C14	R189	E10	R225	C16	R507	G13	R513	F14	R541	E13	R802	G16	R820	D15	X501	F3		
8	F3	IC106	C4	IC507	G4	Q105	C16	Q211	C17	Q520	E3	R106	E11	R112	D11	R120	E12	R127	F12	R134	G12	R141	G11	R167	F12	R179	G12	R190	C11	R226	B16	R508	G13	R514	E13	R550	F15	R803	F17	R821	D15	ZD501	E2		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17
A
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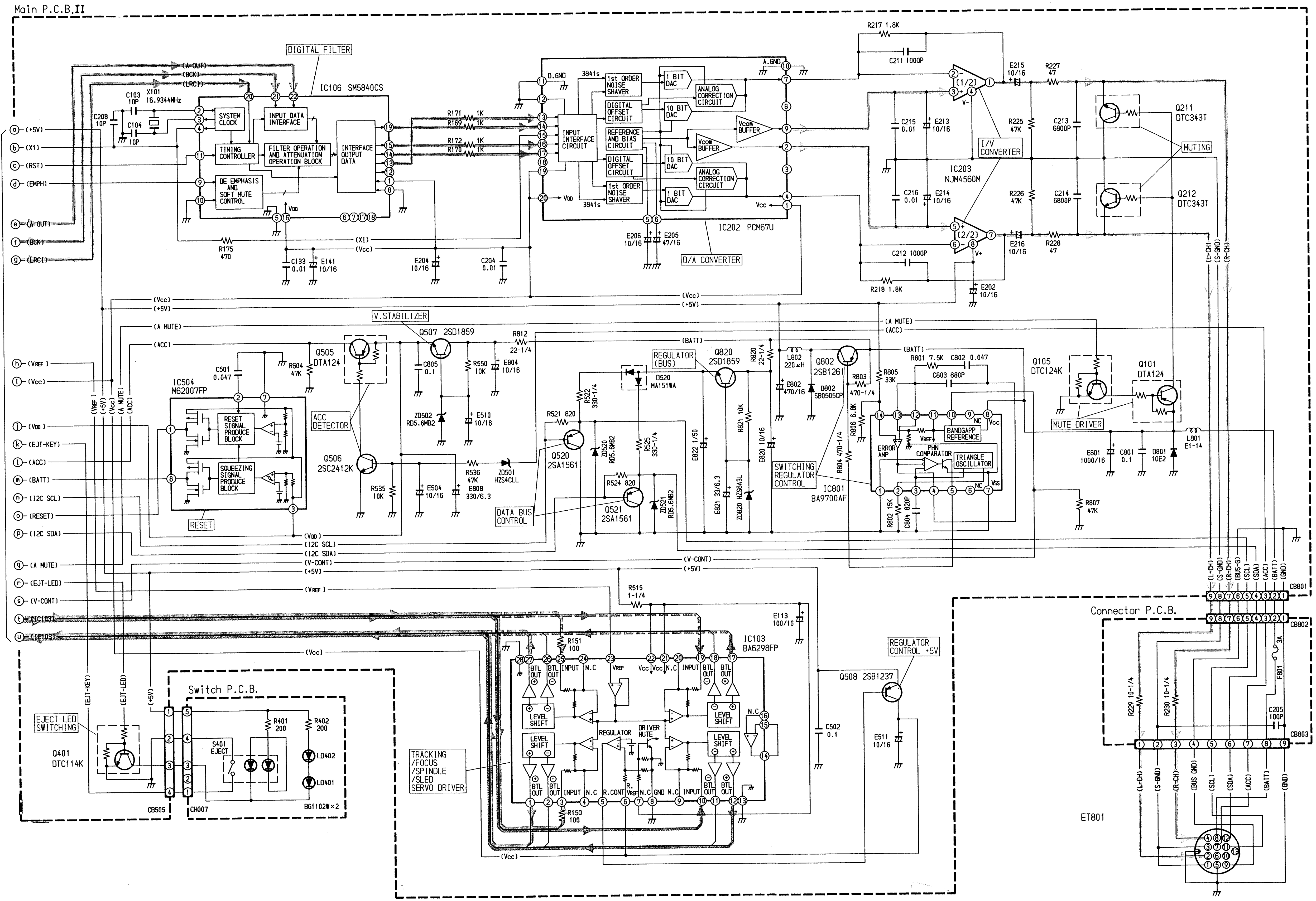
D
E
F
G
NT VIEW
SOLDER VIEW
84D41993W01-0
IC101
IC102
IC103
Q508
Q103
E113
E511
E102
E121
E105
E101
E128
VR103
VR101
CB102
CB101
R107
C502
R515
R117
C110
R116
C107
R118
R115
R113
C109
Q114
R114
Q116
R190
R192
C106
C108
C105
R112
R111
R110
R109
R151
R150
Q112
D104
R103
R102
C155
C101
C143
Q113
R189
R188
R148
C129
R107
R108
R106
C130
R105
C151
C127
R147
C152
C153
Q102
R120
R121
C128
R146
R145
C113
R122
R123
R167
C111
C114
R126
C115
R124
C116
R128
R127
R144
R125
R129
C117
R130
C150
C122
R140
C118
R186
C142
C119
R131
R132
C124
C123
R185
R133
C120
R136
R137
R139
Q111
R141
R180
C121
R138
R187
R134
R179
C140
R181
R135
IC109
C133
F141
X101
R194
C103
R195
C104
R173
C208
R175
R169
R170
R172
R171
C204
C216
C212
R218
IC203
R217
C215
C211
R228
C214
R226
Q212
R225
C213
R227
Q105
Q101
Q211
D801
L801
E801
E202
E216
E215
E822
E821
C820
R821
R820
ZD521
D520
ZD520
R522
R525
R521
R524
R536
R535
Q506
R541
C501
Q505
R812
R514
R603
R604
C805
R550
R505
L802
Q802
ZD502
R512
R513
R804
R803
D802
C801
R807
C803
C804
C802
R805
R806
R802
R801
R507
R508
R510
R509
R501
R506
R511
IC507
Q401

5. Circuit diagram II

IC	IC504 IC106 IC202 IC103 IC801 IC203
Transistor (Q)	Q401 Q505 Q506 Q507 Q520 Q521 Q820 Q802 Q508 Q105 Q101 Q211 Q212


Main P.C.B.II
DIGITAL FILTER
IC106 SM5840CS
X101 16.9344MHz
SYSTEM CLOCK
INPUT DATA INTERFACE
TIMING CONTROLLER
FILTER OPERATION AND ATTENUATION OPERATION BLOCK
INTERFACE OUTPUT DATA
DE EMPHASIS AND SOFT MUTE CONTROL
(A OUT)
(BCK)
(LRCI)
D/A CONVERTER
IC202 PCM67U
1st ORDER NOISE SHAVER
DIGITAL OFFSET CIRCUIT
REFERENCE AND BIAS CIRCUIT
INPUT INTERFACE CIRCUIT
1 BIT DAC
10 BIT DAC
ANALOG CORRECTION CIRCUIT
Vcom BUFFER
A.GND
D.GND
I/V CONVERTER
IC203 NJM4560M
MUTING
Q211 DTC343T
Q212 DTC343T
TO PART I
V.STABILIZER
Q507 2SD1859
Q505 DTA124
IC504 M62007FP
RESET SIGNAL PRODUCE BLOCK
SQUEEZING SIGNAL PRODUCE BLOCK
RESET
ACC DETECTOR
Q506 2SC2412K
REGULATOR (BUS)
Q820 2SD1859
Q802 2SB1261
D520 MA151WA
Q520 2SA1561
Q521 2SA1561
DATA BUS CONTROL
SWITCHING REGULATOR CONTROL
IC801 BA9700AF
ERROR AMP
PWM COMPARATOR
BANDGAPP REFERENCE
TRIANGLE OSCILLATOR
Q105 DTC124K
Q101 DTA124
MUTE DRIVER
CB801
Connector P.C.B.
CB802
CB803
ET801
IC103 BA6298FP
BTL OUT
INPUT
LEVEL SHIFT
REGULATOR
DRIVER MUTE
TRACKING /FOCUS /SPINDLE /SLED SERVO DRIVER
REGULATOR CONTROL +5V
Q508 2SB1237
Switch P.C.B.
EJECT-LED SWITCHING
Q401 DTC114K
S401 EJECT
LD402
LD401
CB505
CH007
BG1102W×2
(L-CH) (S-GND) (R-CH) (BUS GND) (SCL) (SDA) (ACC) (BATT) (GND)

IC103

1	3.2V	15	6.88V
2	3.52V	16	NC
3	2.23V	17	3.45V
4	NC	18	3.25V
5	6.68V	19	2.05
6	5.04V	20	NC
7	7.15V	21	7.12V
8	0V	22	7.12V
9	NC	23	2.1V
10	2.35V	24	NC
11	6.69V	25	2.05V
12	3.05V	26	3.3V
13	0V	27	3.4V
14	6.88V	28	0V

IC106

1	5.04V	12
2	PS	13
3	PS	14
4	PS	15
5	0V	16
6	NC	17
7	NC	18
8	0V	19
9	5.02V	20
10	0V	21
11	4.85V	22

IC202

1	5.04V	11	0V
2	3.4V	12	0V
3	NC	13	PS
4	3.4V	14	PS
5	3.24V	15	PS
6	4.08V	16	PS
7	3.4V	17	PS
8	NC	18	NC
9	3.4V	19	5.04V
10	0V	20	5.04V

IC203

1	4.57V
2	3.4V
3	3.4V
4	0V
5	3.4V
6	3.4V
7	4.58V
8	7.31V

IC504

1	4.86V
2	4.77V
3	4.86V
4	NC
5	NC
6	NC
7	0V
8	4.88V

IC801

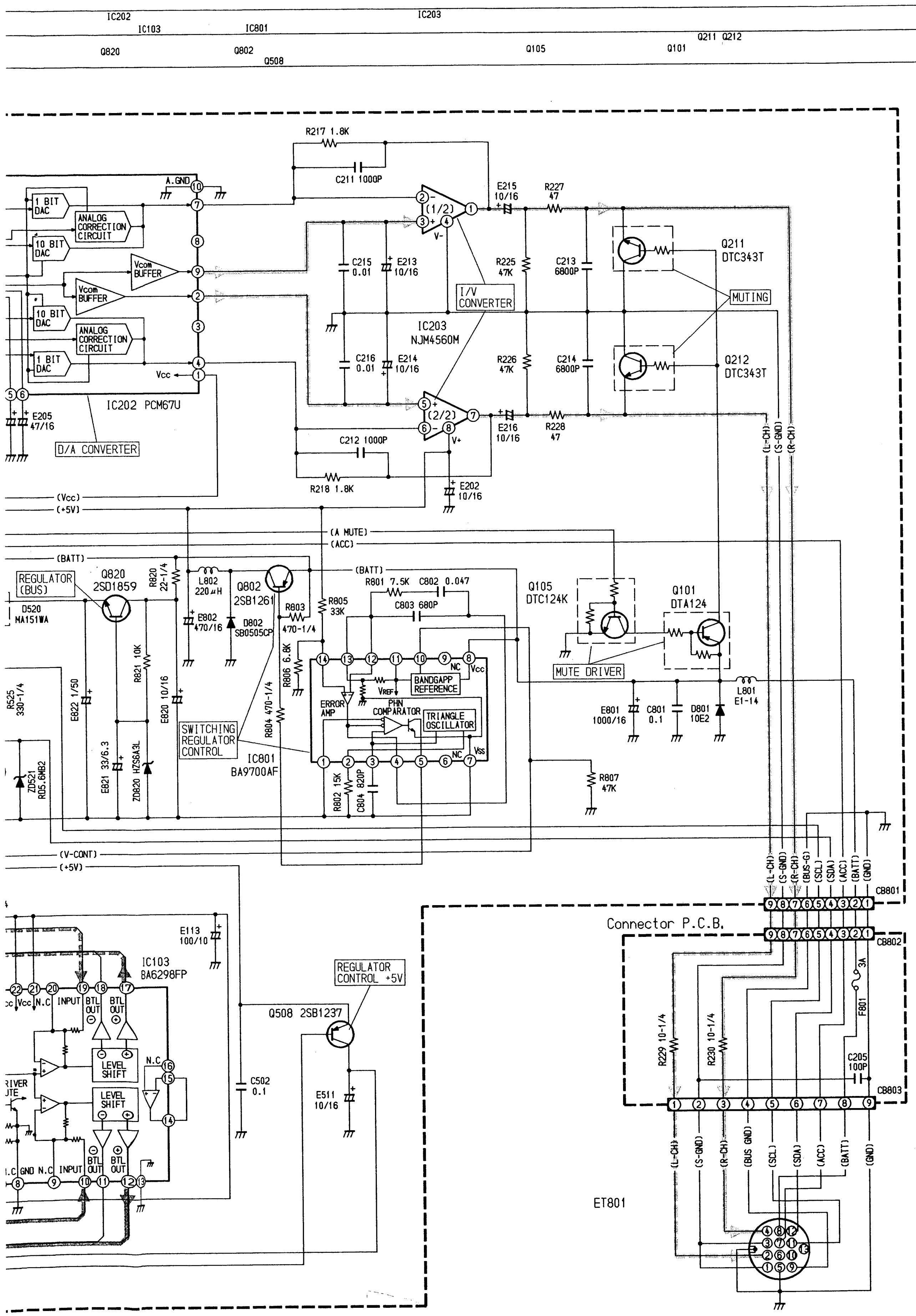
1	0V	8	13.1V
2	0.87V	9	NC
3	1.7V	10	4.82V
4	1.18V	11	NC
5	PS	12	1.25V
6	NC	13	1.25V
7	0V	14	1.25V

	E	C	B
Q101	13.02V	0V	12.96V
Q105	0V	12.98V	0V
Q211	0V	0V	0V
Q212	0V	0V	0V
Q401	0V	0.12V	4.81V
Q520	4.4V	0V	4.4V
Q521	4.4V	0V	4.4V
Q505	4.86V	4.85V	0V
Q506	0V	0V	0.6V
Q507	4.86V	12.86V	5.46V
Q508	7.31V	5.04V	6.68V
Q802	12.98V	7.54V	12.49V
Q820	5V	14V	5.6V

Mode: **playback (test CD audi**
track no.1 1 kHz
All resistor values are in Ohm;
All capacitor values are in μF;

Ⓥ E.V.M.

▨ CD Signal Line (Digital)
▨ L-ch Signal Line
▨ R-ch Signal Line
▨ Focus Error Signal Line
▨ Tracking Error Signal Line
▨ Spindle Drive Signal Line
▨ Sled Drive Signal Line


IC202
IC103
IC801
IC203
Q820
Q802
Q508
Q105
Q101
Q211 Q212
R217 1.8K
C211 1000P
A.GND
1 BIT DAC
10 BIT DAC
ANALOG CORRECTION CIRCUIT
Vcom BUFFER
Vcc
IC202 PCM67U
D/A CONVERTER
E205 47/16
E215 10/16
R227 47
(1/2)
V-
C215 0.01
E213 10/16
R225 47K
C213 6800P
Q211 DTC343T
I/V CONVERTER
MUTING
IC203 NJM4560M
C216 0.01
E214 10/16
R226 47K
C214 6800P
Q212 DTC343T
(2/2)
V+
E216 10/16
R228 47
C212 1000P
R218 1.8K
E202 10/16
(Vcc)
(+5V)
(BATT)
(A MUTE)
(ACC)
REGULATOR (BUS)
Q820 2SD1859
D520 MA151WA
R820 22-1/4
L802 220μH
E802 470/16
D802 SB0505CP
Q802 2SB1261
R803 470-1/4
R805 33K
R801 7.5K
C802 0.047
C803 680P
Q105 DTC124K
Q101 DTA124
MUTE DRIVER
BANDGAPP REFERENCE
VREF
ERROR AMP
PWM COMPARATOR
TRIANGLE OSCILLATOR
NC
Vss
R806 6.8K
R804 470-1/4
SWITCHING REGULATOR CONTROL
IC801 BA9700AF
R802 15K
C804 820P
E801 1000/16
C801 0.1
D801 10E2
L801 E1-14
R807 47K
R525 330-1/4
ZD521 RD5.6MB2
E822 1/50
R821 10K
E821 33/6.3
ZD820 HZS6A3L
E820 10/16
(L-CH)
(S-GND)
(R-CH)
(V-CONT)
(BUS-G)
(SCL)
(SDA)
(ACC)
(BATT)
(GND)
CB801
Connector P.C.B.
CB802
3A
F801
C205 100P
CB803
R229 10-1/4
R230 10-1/4
E113 100/10
IC103 BA6298FP
Vcc
N.C
INPUT
BTL OUT
LEVEL SHIFT
GND
DRIVER MUTE
REGULATOR CONTROL +5V
Q508 2SB1237
C502 0.1
E511 10/16
(BUS GND)
ET801

IC103

1	3.2V	15	6.88V
2	3.52V	16	NC
3	2.23V	17	3.45V
4	NC	18	3.25V
5	6.68V	19	2.05
6	5.04V	20	NC
7	7.15V	21	7.12V
8	0V	22	7.12V
9	NC	23	2.1V
10	2.35V	24	NC
11	6.69V	25	2.05V
12	3.05V	26	3.3V
13	0V	27	3.4V
14	6.88V	28	0V

IC106

1	5.04V	12	NC
2	PS	13	PS
3	PS	14	PS
4	PS	15	PS
5	0V	16	5.04V
6	NC	17	NC
7	NC	18	NC
8	0V	19	PS
9	5.02V	20	PS
10	0V	21	PS
11	4.85V	22	PS

IC202

1	5.04V	11	0V
2	3.4V	12	0V
3	NC	13	PS
4	3.4V	14	PS
5	3.24V	15	PS
6	4.08V	16	PS
7	3.4V	17	PS
8	NC	18	NC
9	3.4V	19	5.04V
10	0V	20	5.04V

IC203

1	4.57V
2	3.4V
3	3.4V
4	0V
5	3.4V
6	3.4V
7	4.58V
8	7.31V

IC504

1	4.86V
2	4.77V
3	4.86V
4	NC
5	NC
6	NC
7	0V
8	4.88V

IC801

1	0V	8	13.1V
2	0.87V	9	NC
3	1.7V	10	4.82V
4	1.18V	11	NC
5	PS	12	1.25V
6	NC	13	1.25V
7	0V	14	1.25V

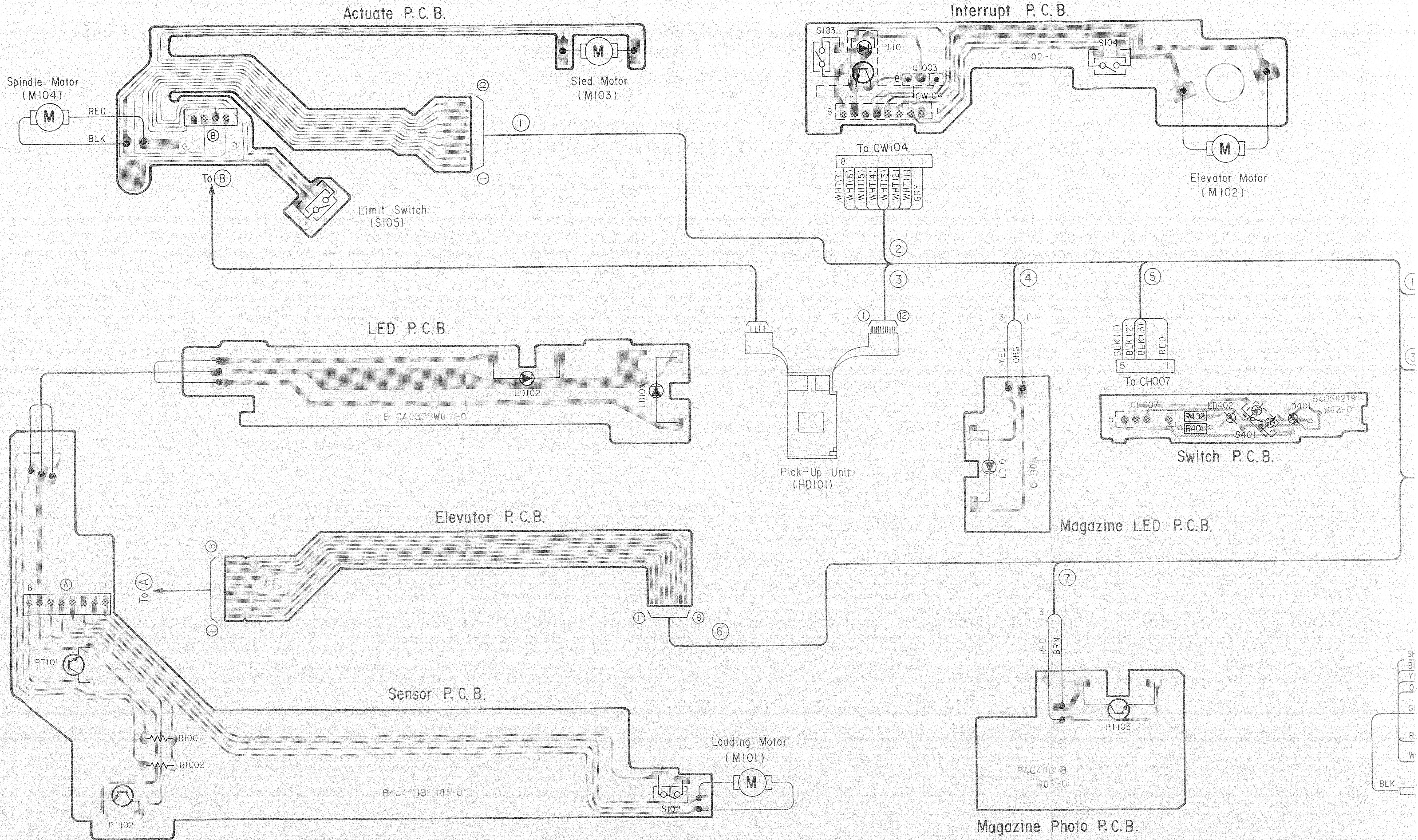
	E	C	B
Q101	13.02V	0V	12.96V
Q105	0V	12.98V	0V
Q211	0V	0V	0V
Q212	0V	0V	0V
Q401	0V	0.12V	4.81V
Q520	4.4V	0V	4.4V
Q521	4.4V	0V	4.4V
Q505	4.86V	4.85V	0V
Q506	0V	0V	0.6V
Q507	4.86V	12.86V	5.46V
Q508	7.31V	5.04V	6.68V
Q802	12.98V	7.54V	12.49V
Q820	5V	14V	5.6V

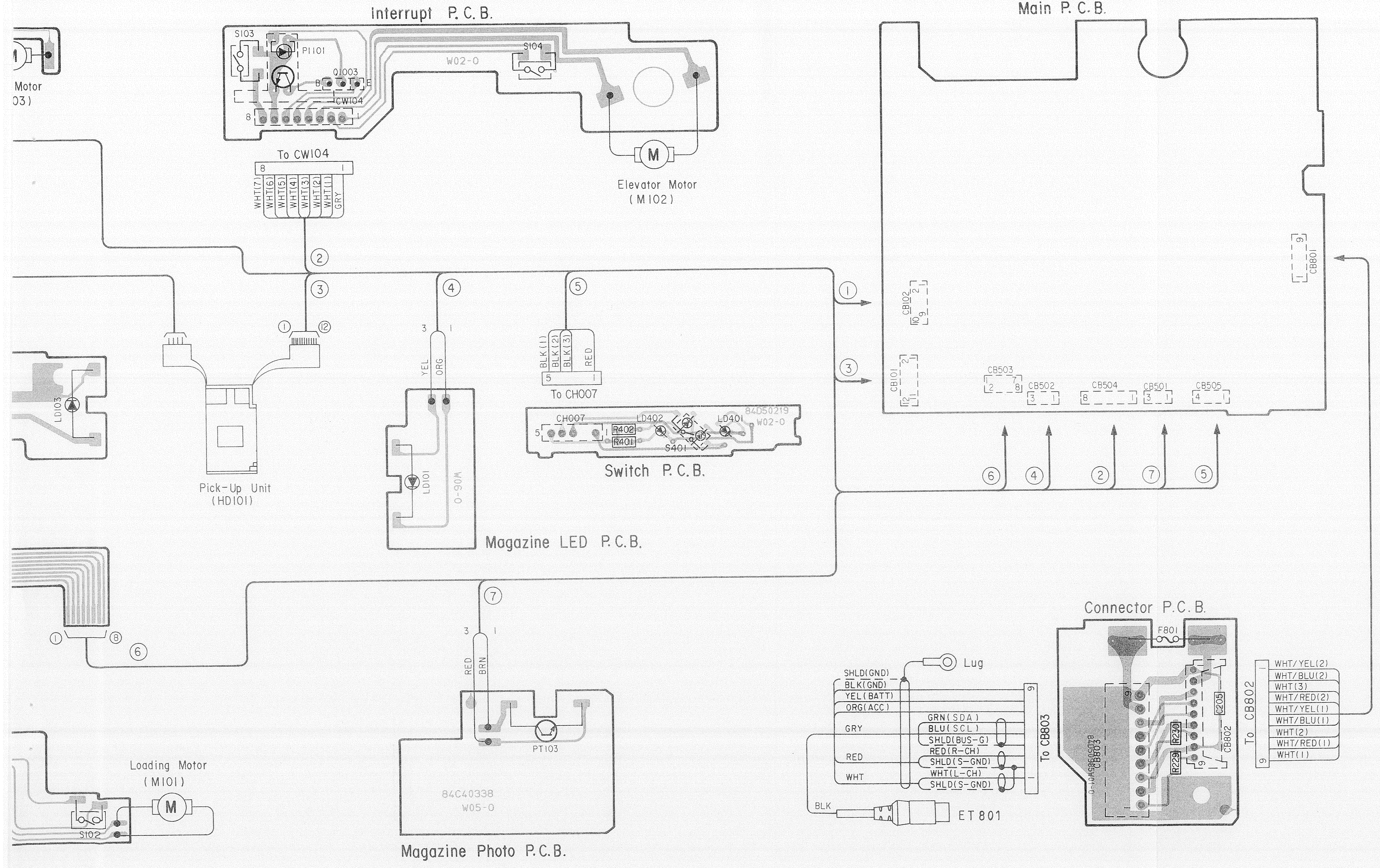
E.V.M.

Mode: playback (test CD audio signals disc 1, track no.1 1 kHz
All resistor values are in Ohm; K = 1000
All capacitor values are in μF; P = 0.000001

CD Signal Line (Digital)
L-ch Signal Line
R-ch Signal Line
Focus Error Signal Line
Tracking Error Signal Line
Spindle Drive Signal Line
Sled Drive Signal Line

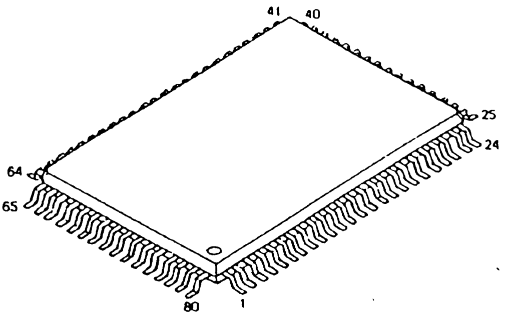
6. Layout PCB's & wiring diagram


Actuate P.C.B.
Spindle Motor
(M104)
M
RED
BLK
B
To B
Sled Motor
(M103)
M
10
1
①
Limit Switch
(S105)
Interrupt P.C.B.
S103
P1101
Q1003
B
E
CW104
8
1
W02-0
S104
Elevator Motor
(M102)
M
To CW104
8
1
WHT(7)
WHT(6)
WHT(5)
WHT(4)
WHT(3)
WHT(2)
WHT(1)
GRY
②
③
④
⑤
LED P.C.B.
LD102
LD103
84C40338W03-0
①
⑫
Pick-Up Unit
(HD101)
3
1
YEL
ORG
LD101
W06-0
Magazine LED P.C.B.
BLK(1)
BLK(2)
BLK(3)
RED
5
1
To CH007
CH007
LD402
LD401
84D50219
W02-0
R402
R401
S401
5
Switch P.C.B.
Elevator P.C.B.
⑧
①
To A
①
⑧
⑥
⑦
8
A
1
PT101
R1001
R1002
PT102
Sensor P.C.B.
84C40338W01-0
Loading Motor
(M101)
M
S102
3
1
RED
BRN
PT103
84C40338
W05-0
Magazine Photo P.C.B.
BLK


Interrupt P.C.B.
S103
P1101
Q1003
B
E
CW104
8
1
S104
W02-0
Elevator Motor
(M102)
M
Motor
03)
To CW104
WHT(7)
WHT(6)
WHT(5)
WHT(4)
WHT(3)
WHT(2)
WHT(1)
GRY
②
③
④
⑤
①
⑫
Pick-Up Unit
(HD101)
LD103
YEL
ORG
3
1
LD101
W06-0
Magazine LED P.C.B.
BLK(1)
BLK(2)
BLK(3)
RED
5
1
To CH007
CH007
R402
R401
LD402
S401
LD401
84D50219
W02-0
Switch P.C.B.
Main P.C.B.
CB102
10
9
2
1
CB101
12
11
CB503
2
7
8
CB502
3
1
CB504
8
1
CB501
3
1
CB505
4
1
CB801
9
1
⑥
④
②
⑦
⑤
⑦
①
⑧
⑥
RED
BRN
PT103
84C40338
W05-0
Magazine Photo P.C.B.
Loading Motor
(M101)
M
S102
Connector P.C.B.
F801
Lug
SHLD(GND)
BLK(GND)
YEL(BATT)
ORG(ACC)
GRY
RED
WHT
GRN(SDA)
BLU(SCL)
SHLD(BUS-G)
RED(R-CH)
SHLD(S-GND)
WHT(L-CH)
SHLD(S-GND)
BLK
ET801
To CB803
9
1
CB803
C205
R230
R229
CB802
To CB802
WHT/YEL(2)
WHT/BLU(2)
WHT(3)
WHT/RED(2)
WHT/YEL(1)
WHT/BLU(1)
WHT(2)
WHT/RED(1)
WHT(1)

17. Semiconductor blockdiagrams & lead layout

TC9236AF : IC101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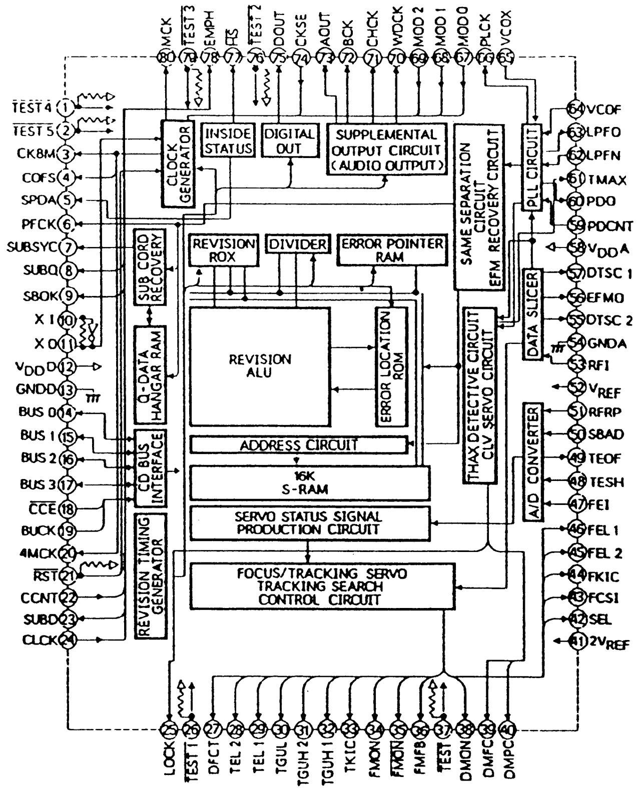
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TEST5
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COFS
SPOA
PFCK
SUBSYC
SUBQ
SBOK
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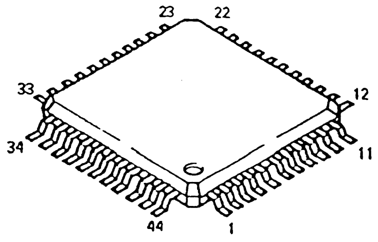
X O
VDD D
GNDD
BUS 0
BUS 1
BUS 2
BUS 3
CCE
BUCK
4MCK
RST
CCNT
SUBQ
CLCK
MCK
TEST3
EMPH
HS
TEST2
DOUT
CKSE
AOUT
BCK
CHCK
WDCK
MOD 2
MOD 1
MOD 0
PLCK
VCOX
VCOF
LPFO
LPFN
TMAX
PDO
PDCNT
VDDA
DTSC 1
EFMO
DTSC 2
GNDA
RFI
VREF
RFRP
SBAD
TEOF
TESH
FEI
FEL 1
FEL 2
FKIC
FCSI
SEL
2VREF
LOCK
TEST 1
DFCT
TEL 2
TEL 1
TGUL
TGUH 2
TGUH 1
TKIC
FMON
FMON
FMPB
TEST
DMON
DMFC
DMPC
CLOCK GENERATOR
INSIDE STATUS
DIGITAL OUT
SUPPLEMENTAL OUTPUT CIRCUIT (AUDIO OUTPUT)
SAME SEPARATION CIRCUIT EFM RECOVERY CIRCUIT
PLL CIRCUIT
SUB CORD RECOVERY
REVISION ROX
DIVIDER
ERROR POINTER RAM
REVISION ALU
ERROR LOCATION ROM
Q-DATA HANGAR RAM
DATA SLICER
THAX DETECTIVE CIRCUIT CLV SERVO CIRCUIT
CD BUS INTERFACE
ADDRESS CIRCUIT
16K S-RAM
A/D CONVERTER
SERVO STATUS SIGNAL PRODUCTION CIRCUIT
REVISION TIMING GENERATOR
FOCUS/TRACKING SERVO TRACKING SEARCH CONTROL CIRCUIT

TA8191F : IC102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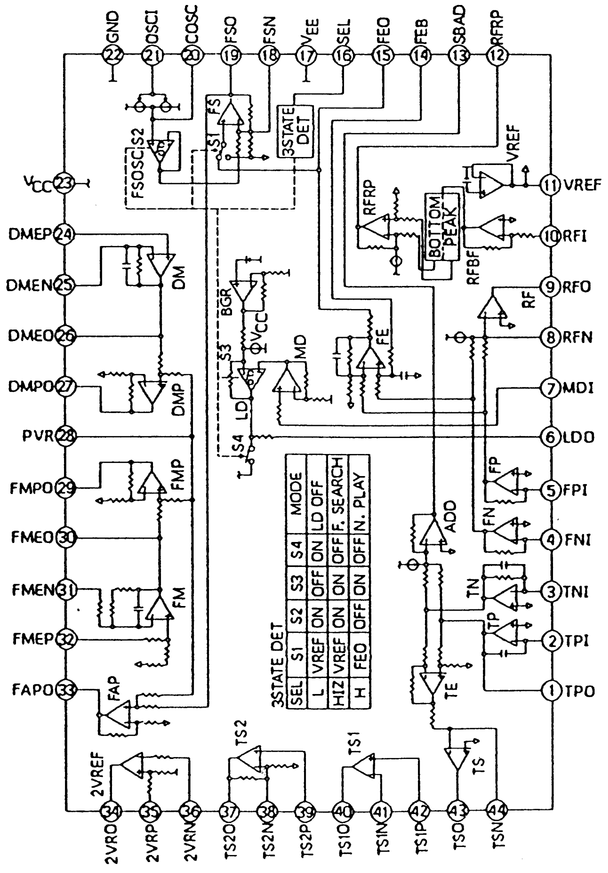
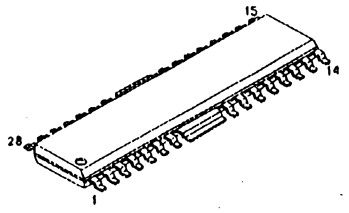
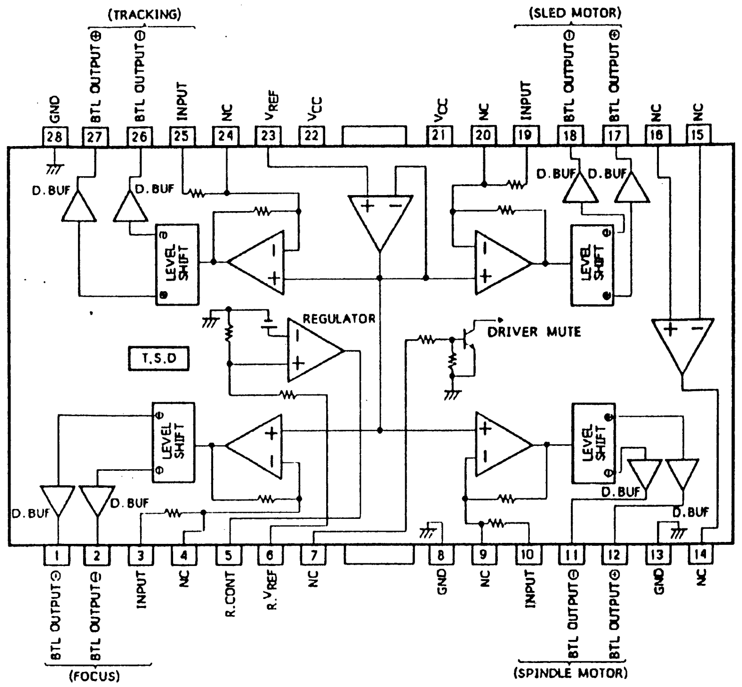
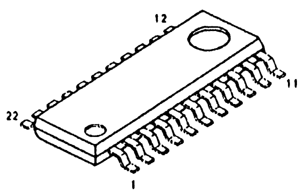

GND
OSCI
COSC
FSO
FSN
VEE
SEL
FEO
FEB
SBAD
RFRP
VCC
DMEP
DMEN
DMEO
DMPO
PVR
FMPO
FMEO
FMEN
FMEP
FAPO
VREF
RFI
RFO
RFN
MDI
LDO
FPI
FNI
TNI
TPI
TPO
2VRO
2VRP
2VRN
TS2O
TS2N
TS2P
TS1O
TS1N
TS1P
TSO
TSN
FSOSC
S2
S1
FS
3STATE DET
RFRP
BOTTOM PEAK
RFBF
RF
DM
DMP
FMP
FM
FAP
BGR
S3
LD
MD
FE
S4
FP
FN
ADD
TN
TP
TE
TS
2VREF
TS2
TS1
3STATE DET
SEL S1 S2
L VREF ON
HIZ VREF ON
H FEO OFF
S3 S4 MODE
OFF ON LD OFF
ON OFF F. SEARCH
OFF OFF N. PLAY

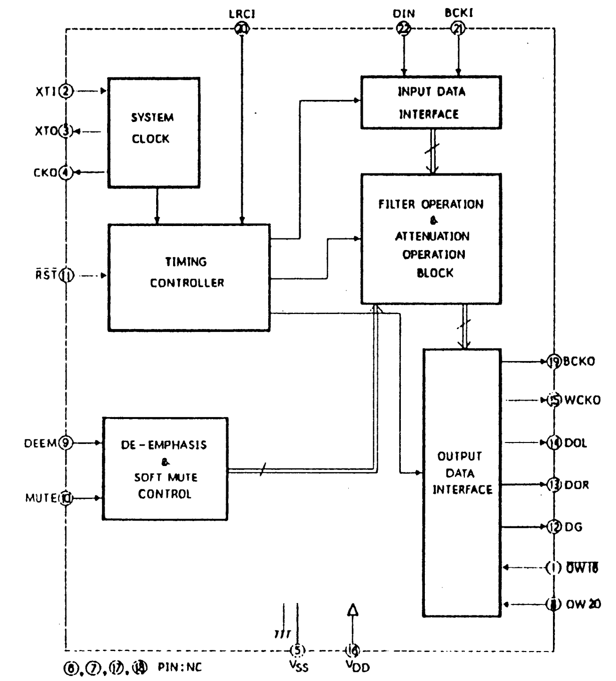
BA6298FP : IC103



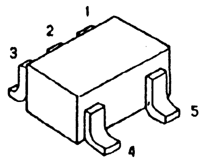

(TRACKING)
(SLED MOTOR)
GND
BTL OUTPUT⊕
BTL OUTPUT⊖
INPUT
NC
VREF
VCC
VCC
NC
INPUT
BTL OUTPUT⊖
BTL OUTPUT⊕
NC
NC
D. BUF
LEVEL SHIFT
REGULATOR
T.S.D
DRIVER MUTE
BTL OUTPUT⊖
BTL OUTPUT⊕
INPUT
NC
R.CONT
R.VREF
NC
GND
NC
INPUT
BTL OUTPUT⊕
BTL OUTPUT⊖
GND
NC
(FOCUS)
(SPINDLE MOTOR)

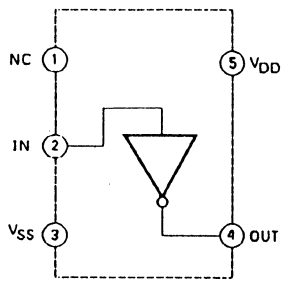
SM5840CS : IC106



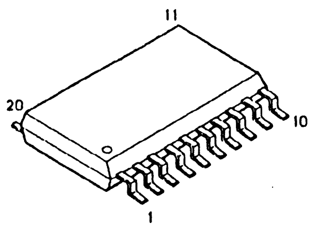

LRCI
DIN
BCKI
XTI
XTO
CKO
RST
DEEM
MUTE
SYSTEM CLOCK
INPUT DATA INTERFACE
FILTER OPERATION & ATTENUATION OPERATION BLOCK
TIMING CONTROLLER
DE-EMPHASIS & SOFT MUTE CONTROL
OUTPUT DATA INTERFACE
BCKO
WCKO
DOL
DOR
DG
OW18
OW20
VSS
VDD
⑥,⑦,⑰,⑱ PIN:NC

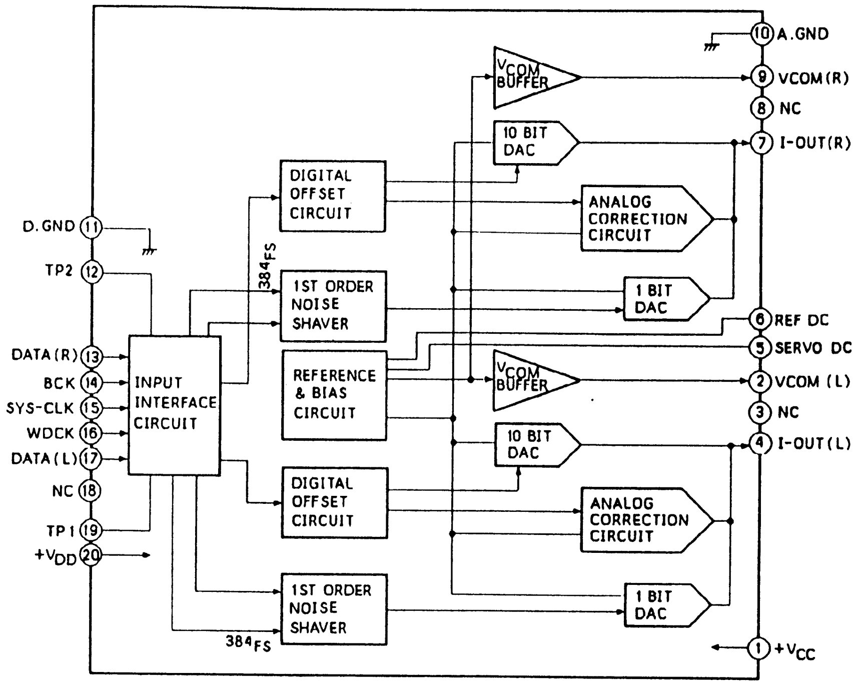
SC7SU04F : IC109



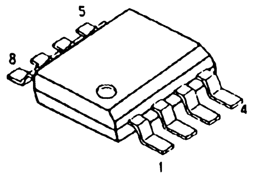

NC
IN
VSS
VDD
OUT

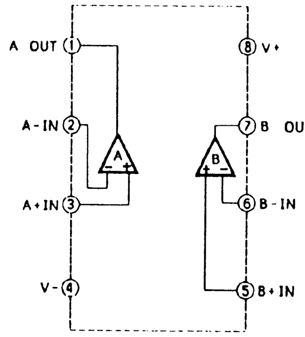
PCM67U: IC202



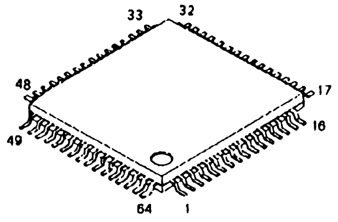

⑩ A.GND
⑨ VCOM (R)
⑧ NC
⑦ I-OUT(R)
⑥ REF DC
⑤ SERVO DC
② VCOM (L)
③ NC
④ I-OUT(L)
① +VCC
D.GND ⑪
TP2 ⑫
DATA(R) ⑬
BCK ⑭
SYS-CLK ⑮
WDCK ⑯
DATA(L) ⑰
NC ⑱
TP1 ⑲
+VDD ⑳
INPUT INTERFACE CIRCUIT
DIGITAL OFFSET CIRCUIT
1ST ORDER NOISE SHAVER
REFERENCE & BIAS CIRCUIT
DIGITAL OFFSET CIRCUIT
1ST ORDER NOISE SHAVER
VCOM BUFFER
10 BIT DAC
ANALOG CORRECTION CIRCUIT
1 BIT DAC
VCOM BUFFER
10 BIT DAC
ANALOG CORRECTION CIRCUIT
1 BIT DAC
384FS
384FS

NJM4560M: IC203



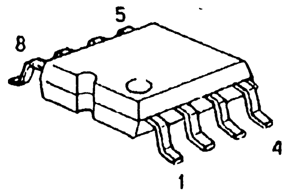

A OUT ①
A-IN ②
A+IN ③
V- ④
⑧ V+
⑦ B OUT
⑥ B-IN
⑤ B+IN
A
B

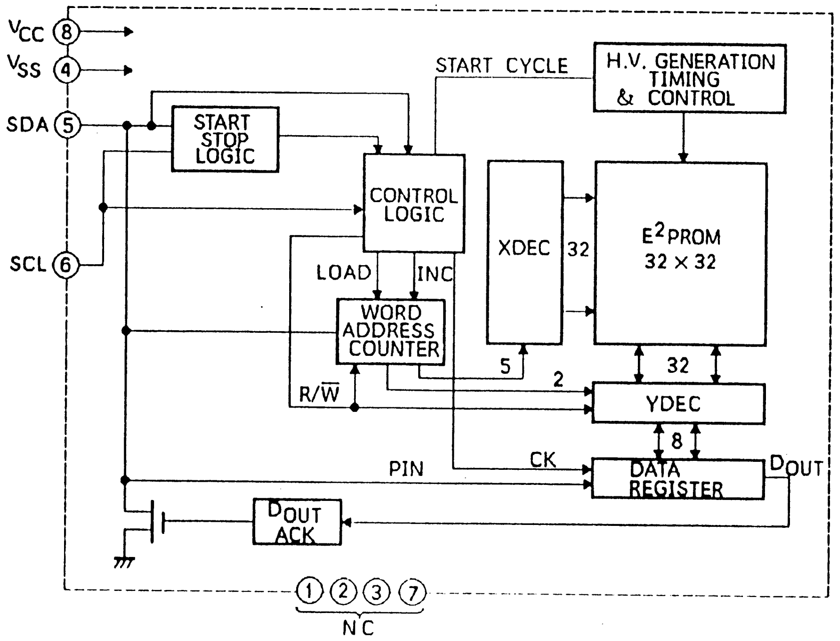
65106W01: IC501


33
32
48
17
49
16
64
1

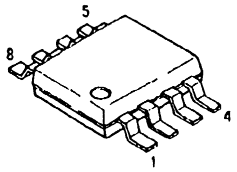
PIN NO.	CODE ADDRESS	I/O	PIN NO.	CODE ADDRESS	I/O	PIN NO.	CODE ADDRESS	I/O
1	SCL	I	23	$\overline{\text{D-OUT}}$	O	45	GND	—
2	SDA	I/O	24	GND	—	46	A·V_{SS}	—
3	NC	—	25	$\overline{\text{LMT-SW}}$	I	47	HI-TEMP	I
4	NC	—	26	LOCK	I	48	LO-TEMP	I
5	NC	—	27	BUS 0	I/O	49	DISC-P	I
6	NC	—	28	BUS 1	I/O	50	LOAD-P	I
7	NC	—	29	BUS 2	I/O	51	DISC-OK	I
8	NC	—	30	BUS 3	I/O	52	DISC-NO	I
9	GND	—	31	BUCK	O	53	GND	—
10	EJT-LED	O	32	$\overline{\text{CCE}}$	O	54	GND	—
11	NC	—	33	BUS-OUT	O	55	A·V_{DD}	—
12	A-MUTE	O	34	NC	—	56	A·V_{REF}	I
13	LOD M+	O	35	RESET	I	57	NC	—
14	LOD M-	O	36	BUS-IN	I	58	NC	—
15	ELV M+	O	37	BATT	I	59	NC	—
16	ELV M-	O	38	ACC	I	60	NC	—
17	V-CONT	O	39	$\overline{\text{EJT-KEY}}$	I	61	NC	—
18	F-CONT	O	40	V_{DD}	—	62	NC	—
19	$\overline{\text{LS-RST}}$	O	41	X 2	—	63	I2C SDA	—
20	$\overline{\text{LOAD-SW}}$	I	42	X 1	—	64	I2C SCL	—
21	$\overline{\text{HOME}}$	I	43	GND	—			
22	MAG-SW	I	44	NC	—			

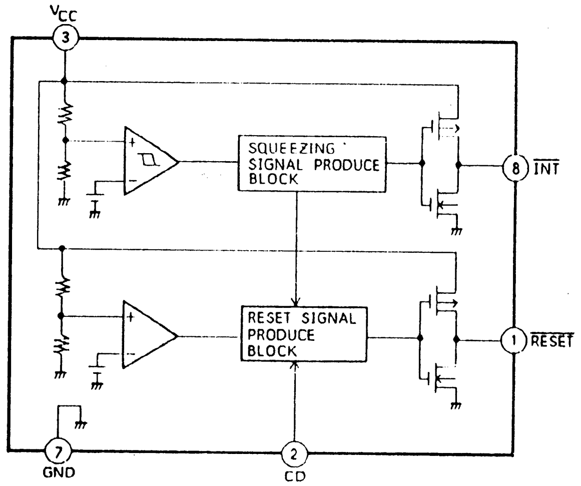
X24LC01SI: IC502



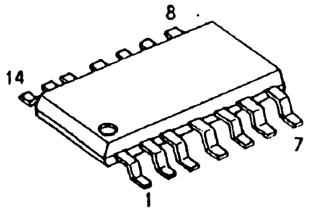

VCC ⑧
VSS ④
SDA ⑤
SCL ⑥
START STOP LOGIC
START CYCLE
H.V. GENERATION TIMING & CONTROL
CONTROL LOGIC
XDEC
32
E2PROM 32 × 32
LOAD
INC
WORD ADDRESS COUNTER
R/W
5
2
32
YDEC
8
PIN
CK
DATA REGISTER
DOUT
DOUT ACK
① ② ③ ⑦
NC

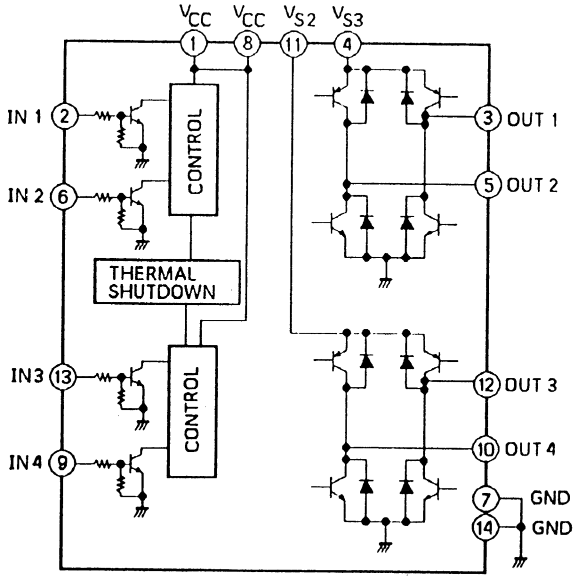
M62007FP: IC504



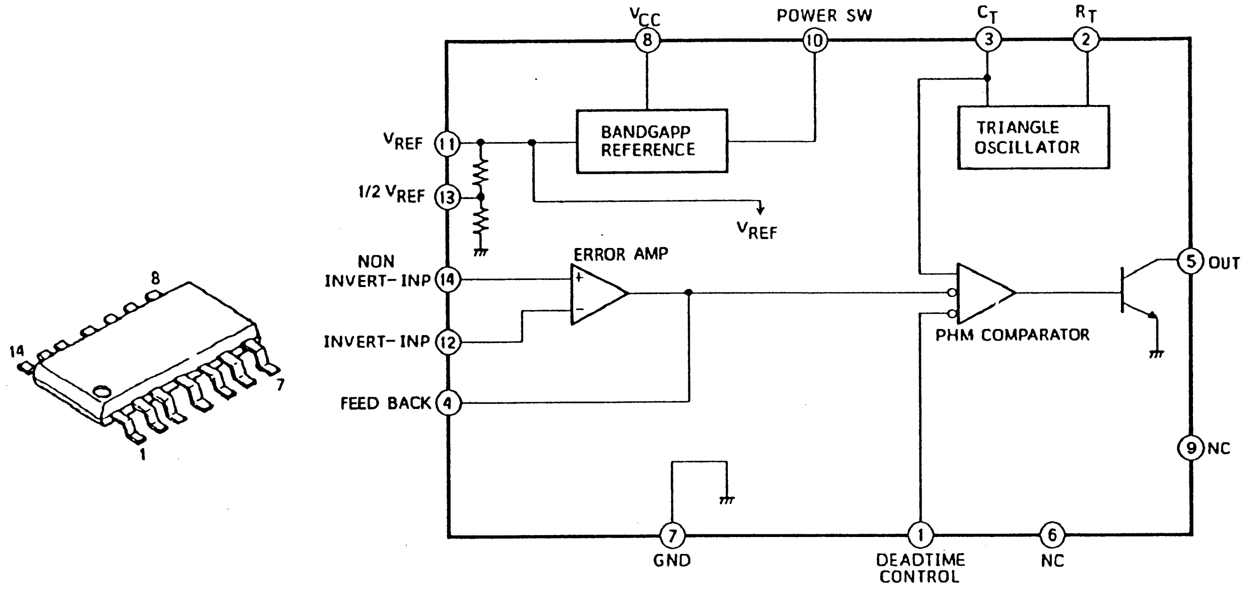

VCC
③
SQUEEZING SIGNAL PRODUCE BLOCK
⑧ INT
RESET SIGNAL PRODUCE BLOCK
① RESET
⑦
GND
②
CD

LB1836M: IC507

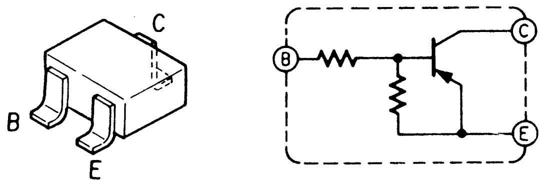



VCC
VCC
VS2
VS3
①
⑧
⑪
④
IN 1 ②
IN 2 ⑥
IN3 ⑬
IN4 ⑨
CONTROL
THERMAL SHUTDOWN
CONTROL
③ OUT 1
⑤ OUT 2
⑫ OUT 3
⑩ OUT 4
⑦ GND
⑭ GND

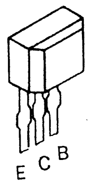
BA9700AF: IC801



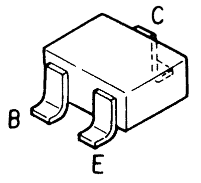
DTA 124: Q101, 115, 505



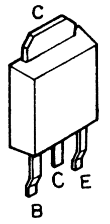
2SD1859: Q507, 820



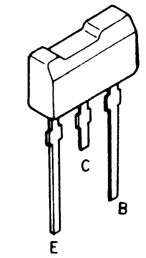
2SA1037K: Q102
2SC4081 : Q111
2SC2412K: Q506



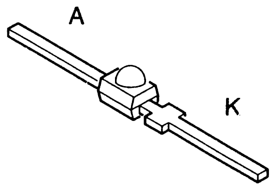
2SB1261: Q802



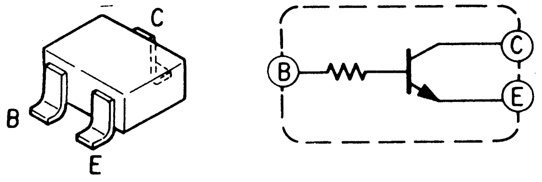
2SB1237: Q103, 508
2SA1561: Q520, 521
2SA937 : Q1003



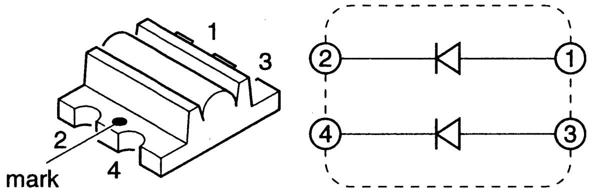
AN501: LD101, 102, 103



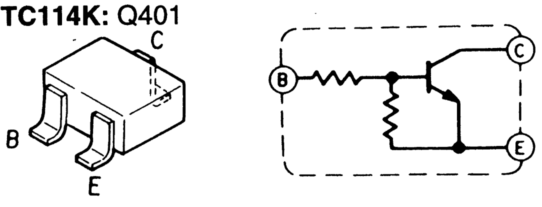
DTC114TK: Q112, 113
DTC343T : Q211, 212



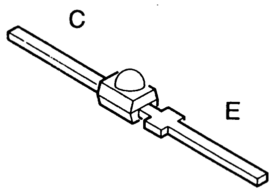
GB1202W: LD401, 402



DTC124K: Q105, 114, 116
DTC114K: Q401



PS5022: PT101, 102, 103



18. List of electrical parts

All components are chip, unless stated otherwise (*) and el.cap.
For resistors and capacitors refer to Standard component catalogue 4822 736 53404.

TH501	4822 111 92105	Thermistor 100k (*)
VR101	4822 100 11879	Trim potm. 150k (*)
VR102	4822 100 12116	Trim potm. 15k (*)
VR103	4822 100 12115	Trim potm. 2k2 (*)

L801	4822 157 70855	Choke (*)
L802	4822 157 70853	220μH (*)

D104	4822 130 33944	DAN202K
D520	4822 130 32866	MA151WA
D801	4822 130 31087	10E2 (*)
D802	4822 130 82779	SB05-05CP
LD101	4822 130 82808	LED AN501 RED (*)
LD102	4822 130 82808	LED AN501 RED (*)
LD103	4822 130 82808	LED AN501 RED (*)
LD401	4822 130 83486	LED BG1102W GREEN (*)
LD402	4822 130 83486	LED BG1102W GREEN (*)
ZD501	4822 130 83488	HZS4CLL (*)
ZD502	4822 130 83499	RD5.6MB2
ZD520	4822 130 83499	RD5.6MB2
ZD521	4822 130 83499	RD5.6MB2
ZD820	4822 130 83484	HZS6A3L (*)

Q101	4822 130 61495	DTA124
Q102	4822 130 62863	2SA1037K
Q103	4822 130 61439	2SB1237 (*)
Q105	4822 130 42821	DTC124K
Q111	4822 130 60669	2SC4081
Q112	4822 130 90323	DTC114TK
Q113	4822 130 90323	DTC114TK
Q114	4822 130 42821	DTC124K
Q115	4822 130 61495	DTA124
Q116	4822 130 42821	DTC124K
Q211	4822 130 62861	DTC343T
Q212	4822 130 62861	DTC343T
Q401	4822 130 63448	DTC114K
Q505	4822 130 61495	DTA124
Q506	4822 130 61272	2SC2412K
Q507	4822 130 63449	2SD1859 (*)
Q508	4822 130 61439	2SB1237 (*)
Q520	4822 130 63452	2SA1561 (*)
Q521	4822 130 63452	2SA1561 (*)
Q802	4822 130 62857	2SB1261
Q820	4822 130 63449	2SD1859 (*)
Q1003	4822 130 63451	2SA937 (*)

IC101	4822 209 31764	TC9236AF DATA processor
IC102	4822 209 31765	TA8191F RF amp/servo contr.
IC103	4822 209 32759	BA6298FP Servo driver
IC106	4822 209 32752	SM5840CS Digitital filter
IC109	4822 209 32755	SC7SU04F Inverter
IC202	4822 209 32754	PCM67U D/A converter
IC203	4822 209 83357	NJM4560M I/V converter
IC501	4822 209 33508	65106W01 μC
IC502	4822 209 32756	X24LC01SI EEPROM
IC504	4822 209 32753	M62007FP Reset
IC507	4822 209 32758	LB1836M Motor driver
IC801	4822 209 32766	BA9700AF Bus driver

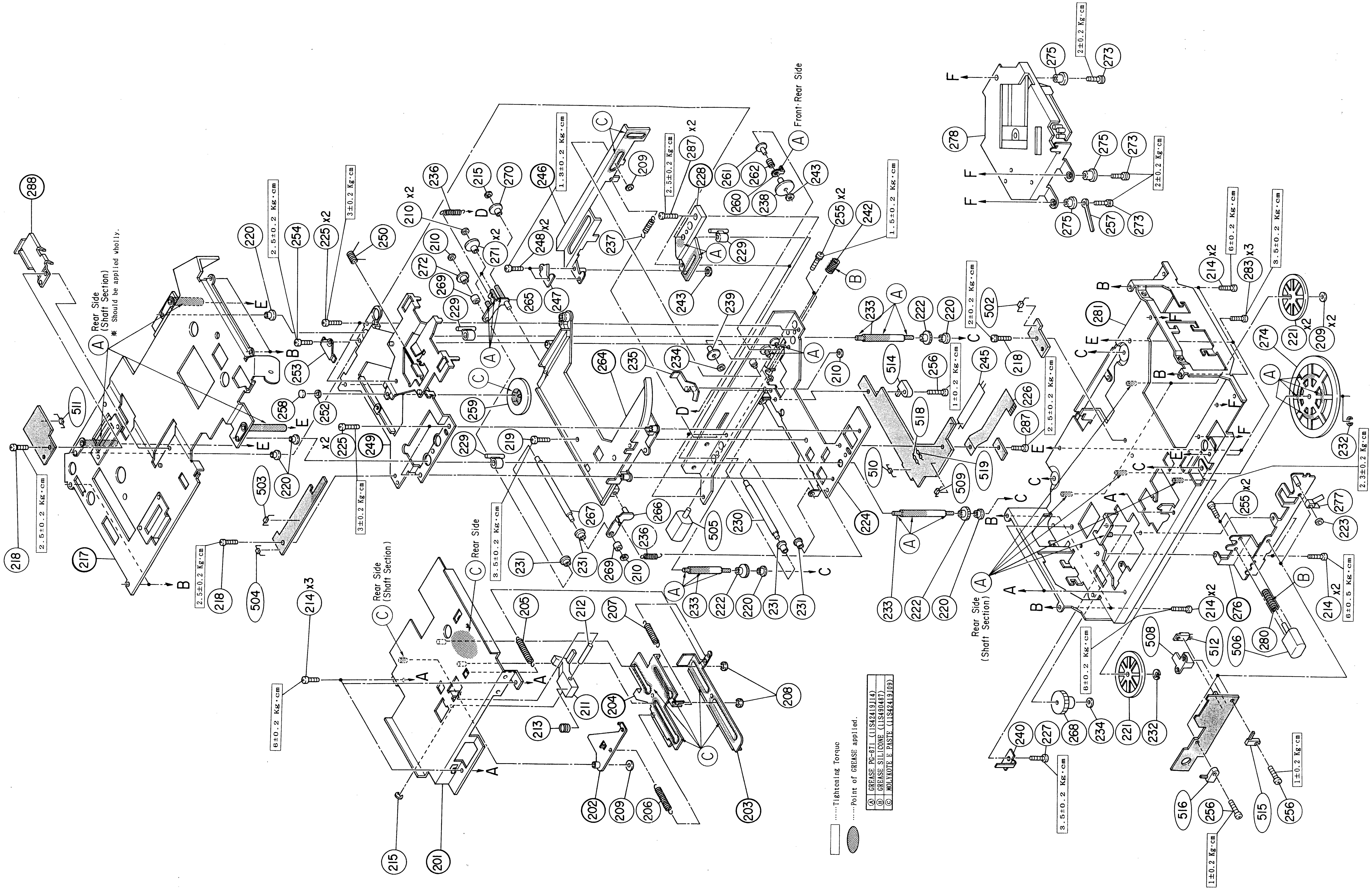
Switch

S102	4822 276 13167	Loading (*)
S103	4822 276 13167	Home (*)
S104	4822 276 13167	Magazine in (*)
S105	4822 276 13167	Limit (*)
S401	4822 271 30815	Eject (*)

Miscellaneous

F801	4822 253 30445	Fuse 3A (*)
HD101	4822 214 52123	Pick-up unit (*)
M101	4822 361 30372	Loading motor (*)
M102	4822 361 30369	Elevator motor (*)
M103	4822 361 30371	Servo motor (*)
PI101	4822 130 82807	GP1S51 Photo interruptor
PT101	4822 130 63446	PS5022-B1 Photo trans. (*)
PT102	4822 130 63446	PS5022-B1 Photo trans. (*)
PT103	4822 130 63098	PS5022 Photo trans. (*)
X101	4822 242 81586	Crystal 16.9344MHz (*)
X501	4822 242 80405	Ceram. filter 4.19mHz (*)

19. Exploded view CD mechanism I

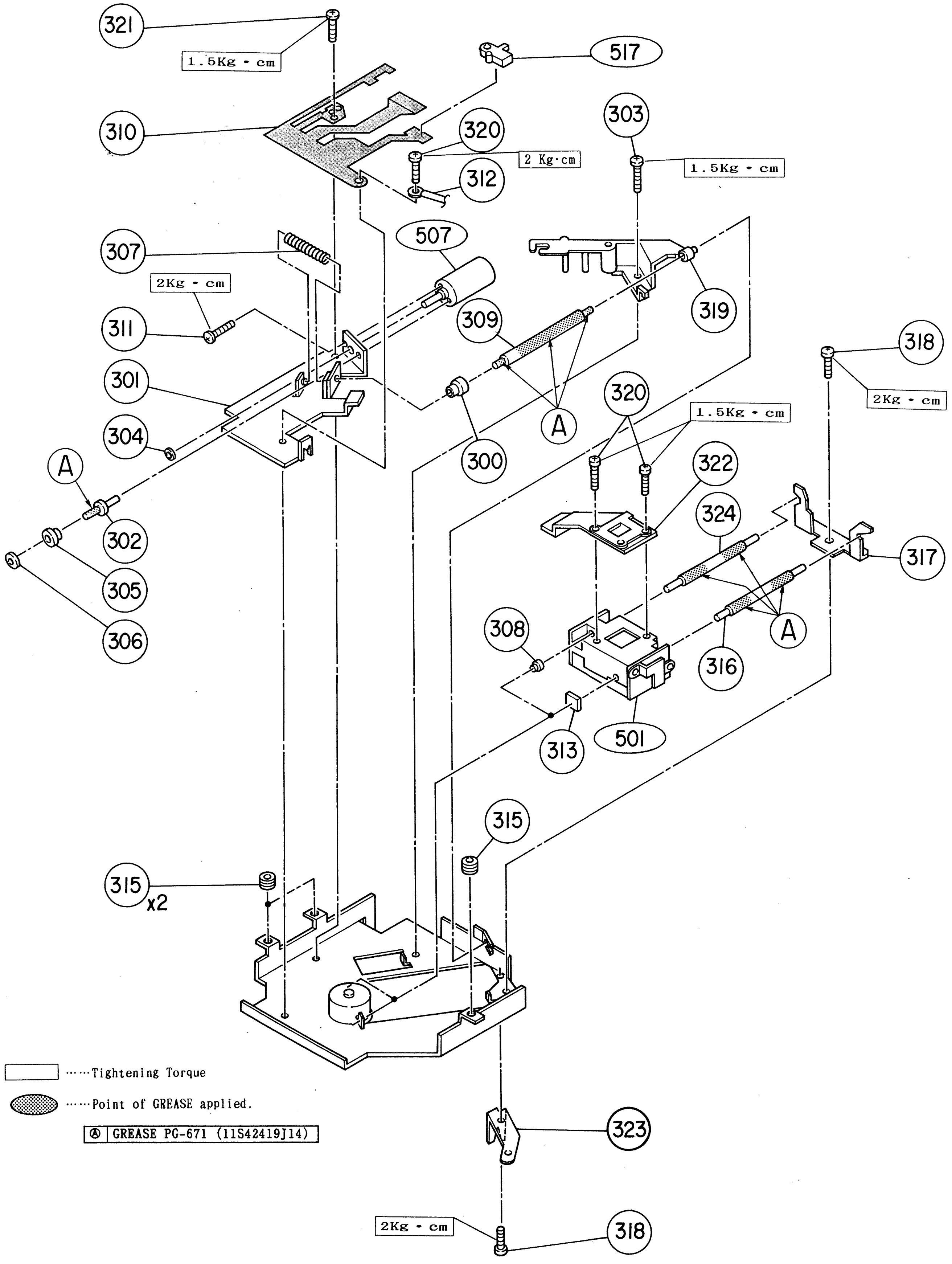

288
218
511
217
2.5±0.2 Kg·cm
Ⓐ Rear Side (Shaft Section)
* Should be applied wholly.
220
254
225 x2
3±0.2 Kg·cm
250
253
258
252
225 x2
249
503
504
214 x3
6±0.2 Kg·cm
Ⓒ Rear Side (Shaft Section)
Ⓒ Rear Side
236
215
270
210 x2
272
269
229
271 x2
265
247
259
219
246
248 x2
1.3±0.2 Kg·cm
237
209
264
235
234
239
228
287 x2
2.5±0.2 Kg·cm
261
262
260
238
243
Ⓐ Front·Rear Side
255 x2
242
1.5±0.2 Kg·cm
233
222
2±0.2 Kg·cm
502
245
256
1±0.2 Kg·cm
514
518
519
226
287
510
509
224
505
230
266
267
231
3.5±0.2 Kg·cm
201
205
212
207
211
204
213
208
202
206
203
Rear Side (Shaft Section)
278
275
273
257
281
214 x2
283 x3
274
221 x2
209 x2
232
2.3±0.2 Kg·cm
277
223
276
280
506
512
508
268
221
240
227
516
515
6±0.5 Kg·cm
A
B
C
D
E
F

▭ ……Tightening Torque

▨ ……Point of GREASE applied.

Ⓐ	GREASE PG-671 (11S424I9J14)
Ⓑ	GREASE SILICONE (11S490487)
Ⓒ	MOLYKOTE E PASTE (11S424I9J09)

20. Exploded view mechanism II

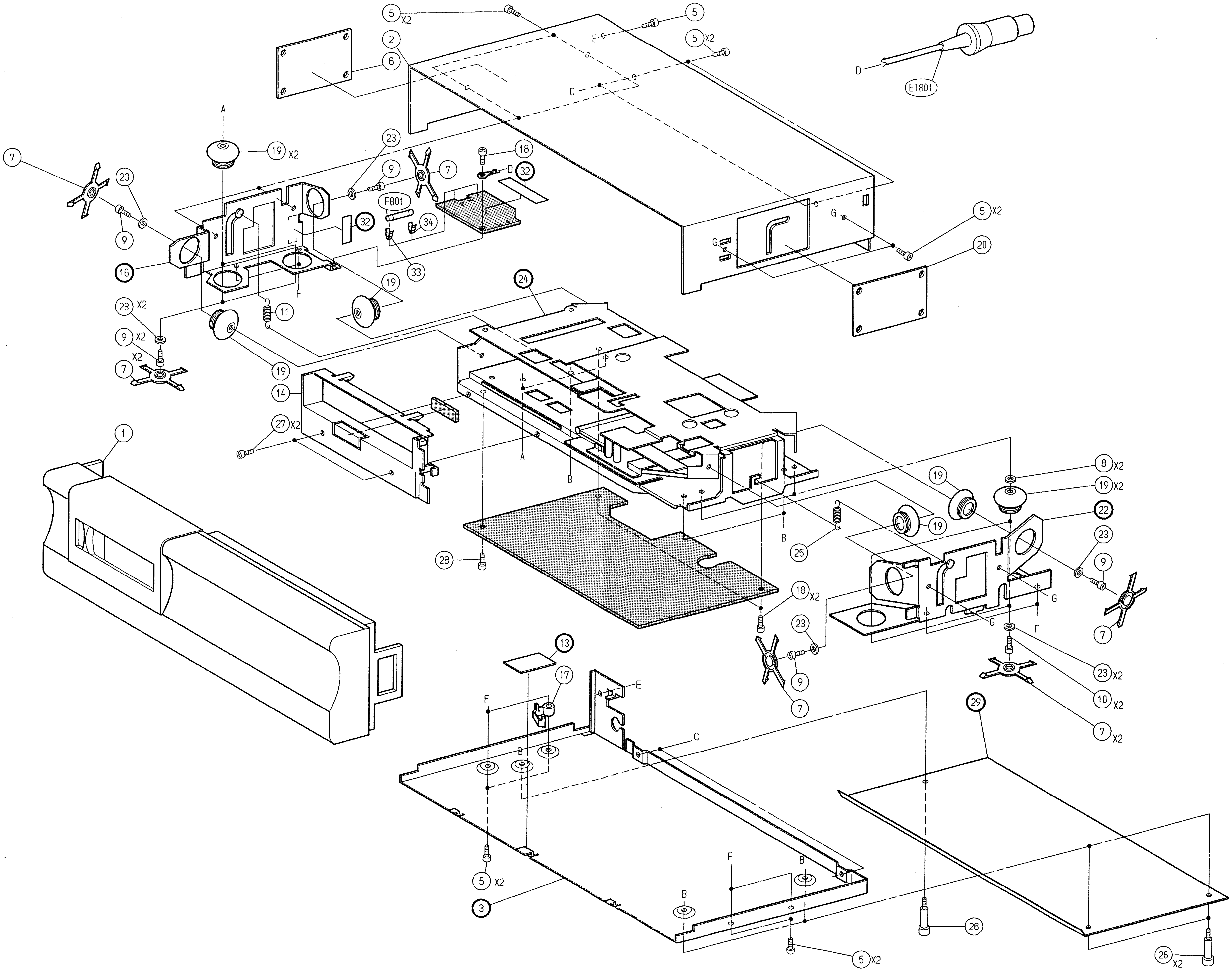

321
1.5Kg・cm
517
310
320
2 Kg・cm
303
1.5Kg・cm
312
507
307
2Kg・cm
309
319
311
318
2Kg・cm
301
320
1.5Kg・cm
A
304
300
322
A
302
324
317
305
306
308
A
316
313
501
315
315
x2
323
2Kg・cm
318
……Tightening Torque
……Point of GREASE applied.
Ⓐ GREASE PG-671 (11S42419J14)

21. List of parts CD mechanism

Only parts listed below are considered Service parts.

203	4822 404 21317	Eject bracket
205	4822 492 33299	Extension spring
221	4822 522 33135	Idle gear
226	4822 466 10608	Foil pcb, elevator
230	4822 535 93438	Roller shaft, bottom
231	4822 532 21488	Bush on shaft 230, 267
234	4822 522 33126	Washer fix gears 239, 268
238	4822 522 33417	Large gear, rear right
239	4822 522 33133	Large gear, rear centre
242	4822 522 33131	Worm, rear centre
243	4822 530 70598	Lock washer, fix 228, 238
259	4822 466 82869	Clamper
261	4822 532 12265	Small bush, rear right
267	4822 528 70762	Roller shaft, left
268	4822 522 33414	Worm wheel, centre left
270	4822 522 33129	Gear, rear centre
271	4822 522 33415	Small gear, rear centre
272	4822 522 33416	Small gear, rear centre
274	4822 522 33132	Large gear, centre
278	4822 691 30323	Drive unit (incl. M104)
280	4822 522 33127	Worm on M102
300	4822 522 33421	Gear, on spindle 309
302	4822 535 80893	Spindle
304	4822 522 33418	Gear on M103
305	4822 522 33419	Gear on spindle 302
309	4822 535 93439	Threaded shaft
310	4822 466 10644	Foil pcb, actuate
315	4822 529 10299	Cushion
316	4822 535 93443	Shaft, Pick-up unit 50°
324	4822 535 93444	Shaft, Pick-up unit B

22. Exploded view set


5 X2
5
5 X2
2
6
E
C
D
ET801
A
19 X2
23
18
9
7
D
32
7
23
9
F801
32
34
16
33
19
23 X2
11
F
9 X2
X2
7
19
24
14
27 X2
G
G
5 X2
20
1
A
B
8 X2
19 X2
19
22
19
25
B
23
9
28
18 X2
23
G
G
F
7
9
7
13
17
E
F
B
C
23 X2
10 X2
7 X2
29
5 X2
3
F
B
B
26
5 X2
26 X2

23. List of mechanical parts set

Only parts listed below are considered Service parts.

1	4822 701 13641
2	4822 423 41245
6	4822 466 62421
7	4822 256 92104
8	4822 532 12261
11	4822 492 71409
14	4822 466 62423
19	4822 529 10298
20	4822 466 62422
25	4822 492 71411
26	4822 502 21393
ET801	4822 267 51284

Accessories

A	4822 321 62262	Extension cable 13p
B	4822 321 62263	Cable, level C - DIN 13p
	4822 691 10356	Magazine 6 CD